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ECONOMIC
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NOVA SCOTIA

VOLUNTARY PLANNING BOARD

PLAN FOR SECONDARY MANUFACTURING SECTOR

by

R. IAN LOGAN
GEORGE P. MILLER

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R. Ian Logan
George P. Miller

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This Plan for Secondary Manufacturing is the first of a series of sector reports to be published by the Nova Scotia Voluntary Planning Board. Its development is fully set out in Chapter I, Introduction. Mr. R. Ian Logan of Acres Research and Planning Limited of Fredericton, New Brunswick and Mr. George P. Miller, formerly a staff member of Voluntary Economic Planning, were commissioned by the Board in August, 1965, to undertake, as a two-man committee, the task of developing a comprehensive secondary manufacturing plan from previously commissioned reports and special committee findings. This Plan, then, is all inclusive and contains not only the thoughts of the Secondary Manufacturing Sector Committee, chaired by Mr. Garnet C. McDade, but also those of the permanent staff members and others requested to assist in the development of a plan for the secondary manufacturing sector of the provincial economy. The policies and recommendations for the accelerated growth of secondary manufacturing which were included in the Board's First Plan for Economic Development to 1968 are presented in greater depth in this Plan.

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I. INTRODUCTION

PURPOSE AND SCOPE OF THE REPORT

This report forms one of a series to be published by the Nova Scotia Voluntary Planning Board. It presents a "plan" for the development of the secondary manufacturing sector of the provincial economy during the Board's First Plan period, 1965 to 1968.

The report begins (Chapter II) with a brief historical review of sector trends in employment and value added during the post-war period. This is followed (Chapter III) by a more detailed analysis of new sector capacity during the period, 1958 to 1965, and an evaluation of the role played by two key development agencies, the provincial Industrial Estates Limited (IEL) and the federal Area Development Agency (ADA), in creating this capacity. Industrial Estates Limited was incorporated in September, 1957; ADA was created in mid-1963. Next (Chapter IV) comes a detailed profile of the secondary manufacturing sector in 1961 and 1962, the latest years for which official published data are available. Various forecast considerations are presented in Chapter V for the sector as a whole and for a number of the component industries together with specific aggregate sector projections of employment and value added for each year of the period, 1965 to 1968, and for 1972. In the final chapter (VI), conclusions are drawn, and specific recommendations are set forth. These recommendations, in total, comprise the sector "plan".

An empirical, pragmatic approach is adopted throughout the report; theorizing is kept to a minimum. The tenor of the analysis is basically optimistic both by conviction and by the nature of the assignment. It has not been the primary task to assess critically the growth potential of the sector, but rather to indicate how a given employment target as determined by the Voluntary Planning Board might be achieved. The views expressed indicate how it might be met and are developed in a general way without rigorous models and with a minimum of quantification. This approach has been necessary because of time and data limitations and because of the "voluntary" nature

of the entire provincial planning effort.

DEVELOPMENT OF THE PLAN

It has already been indicated that this report is the work of a Voluntary Economic Planning (VEP) staff committee. This committee was formed at the end of August, 1965 to co-ordinate and integrate the efforts of a number of individuals and committees working on a secondary manufacturing plan, and to prepare a final and comprehensive sector report. It is useful and informative to outline briefly the history of the planning activity for the sector both to give recognition to the various phases of the work, and to indicate the tremendous amount of effort involved.

A secondary manufacturing sector committee was first organized in December, 1963 as part of the basic programme of the Voluntary Planning Board. This committee appointed five segment committees. Their jurisdictions were textiles and clothing; bakeries, beverages and confectionery; metal products including transportation equipment; non-metallic mineral and chemical products; and other products. Each segment committee was asked:

1. to examine past growth trends in individual industries;

2. to formulate growth targets;

3. to identify obstacles to increased development; and

4. to suggest ways whereby industry and government, either singly or jointly, might overcome any obstacles in the way of target realization.

The sector committee was asked to prepare a plan for the development of the entire sector based in part upon recommendations submitted to it by the segment committees.

Two background reference papers were prepared to assist the committees in their work. The

first was a preliminary, descriptive study indicating the position of secondary manufacturing in the provincial economy during the post-war period by staff from VEP and from the Nova Scotia Department of Trade and Industry. It was presented to the sector organization meeting. The second reference paper was a detailed historical and analytical study by Dr. J.J. Vorstermans of St. Mary's University. It was submitted to the sector committee in November, 1964.

The sector committee published a draft report with recommendations on May 20, 1965. The descriptive and analytical portions have been incorporated into this report. The recommendations were submitted to the Voluntary Planning Board. Those approved are published in the First Plan Report as part of Appendix B. This appendix contains all the recommendations approved by the Voluntary Planning Board from each of its various sector committees.

While the secondary manufacturing sector committee was engaged in formulating its plan, the Voluntary Planning Board and the permanent staff were looking at the provincial economy in aggregate terms to determine general and long-term planning objectives and specific planning targets for the first planning period. Their conclusions were outlined initially in the February, 1965 Report on Progress by the Board and remain unchanged.

Five broad goals have been set for the provincial economy:

1. the highest possible rate of growth with an equitable distribution of per capita income;

2. the highest possible level of employment;

3. the achievement of the highest possible increase in productivity;

4. the development of all the resources of the province to the highest point of efficiency; and

5. the achievement of a climate, both economic and political, that will encourage the development of new industries and the expansion of existing industries.

These goals are to be achieved on the basis of a long-run growth strategy involving structural change. This will consist mainly of "great expansion, both absolutely and relatively in the size and importance of manufacturing and the service industries."

One major target has been set for the First Plan period, 1965 to 1968: the creation of 3,400 new jobs annually in "economic activities which are, or can become, efficient and self-supporting." The bulk of these new jobs are expected to emerge in secondary manufacturing, the service industries and the supporting sectors with the former providing 1,300 and the latter 1,600 jobs annually. Little employment growth is anticipated in the remainder of the economy.

It is hoped that existing secondary manufacturing industries will expand sufficiently to provide many of these new jobs but industrial diversification will also be necessary as the present manufacturing base is relatively narrow limiting its growth potential.

These objectives and targets were not agreed upon until the sector committee had nearly finished drafting its report. Because the secondary manufacturing target was so important and because of the emphasis on industrial diversification, the Board decided to augment the work of the sector committee by setting up a small, voluntary Special Working Committee on Secondary Manufacturing to focus particularly on ways and means of attracting new industry to the province. This committee was to draw heavily on the practical experience of the various agencies in the field of industrial promotion including IEL, the Nova Scotia Department of Trade and Industry, the Industrial Development Division of the Canadian National Railways and the Fantus Factory Locating Service. It met three times -- April 21, May 3 and June 8. The last meeting featured an industrial development clinic

at which the Fantus Company outlined a strategy for attracting new industry to the province and to specific communities. The findings of the Special Committee have been incorporated into this report.

During the summer of 1965, the Board decided to initiate further work in the field of secondary manufacturing including:

1. the determination of an appropriate research agency to assume the major responsibility for investigating in detail the types of new secondary manufacturing industry that might be attracted to the province, and some indication of the staffing requirements of this agency;

2. the development of a comprehensive policy and programme for the promotion of increased concentration of industry and population in the province; and

3. the development of a carefully planned set of incentives to accelerate growth in the secondary manufacturing sector.

Mr. Nelson Mann, Executive Vice President of the Atlantic Provinces Economic Council was asked to investigate the research agency question. A special committee of VEP staff members assisted by Mr. Scott Wood of the Dalhousie Institute of Public Affairs undertook to develop a concentration policy and programme, and an integrated set of industrial incentives.

The Board also decided in mid-1965 to ask Industrial Estates Limited and the Department of Trade and Industry to inform it as to the additional resources and staff required by them to carry out their functions on the scale indicated by the employment target for the secondary manufacturing sector.

As noted at the outset of this section, another VEP staff committee was established at the end of August, 1965 to pull the results of all this

activity together, to fill any major gaps, to strengthen any weak areas and to prepare a final, integrated report.

SECONDARY MANUFACTURING DEFINED

Manufacturing is generally divided into two categories -- primary and secondary -- but the exact point of demarcation is not always clearly understood. There are good reasons for this. Judgments on borderline cases, of which there are several, tend to be arbitrary. And data limitations sometimes necessitate a compromise between concept and actual practice. Thus it is essential to outline briefly in this section the two general manufacturing concepts and the definition of secondary manufacturing used in this report to eliminate possible ambiguities and misunderstandings.

Generally speaking, secondary manufacturing industries can be characterized as follows:

- producers of "end" products in the form of consumer durables and non-durables, and capital goods (although "intermediate" good production is also important)
- domestic market-oriented (although export possibilities are developing rapidly)
- dependent on small and scattered sales outlets
- dependent on both domestic and imported raw materials
- labour-intensive involving higher degrees of processing
- located close to market and major domestic suppliers
- subject to strong import competition
- tariff-protected.

Primary manufacturing industries, on the other hand, tend to be:

- producers of intermediate goods (although "end" products are also significant)
- export-oriented (although domestic markets are important and growing)
- dependent on a relatively few buyers for their sales
- dependent on and located near domestic natural resources
- capital-intensive with a relatively low value added-sales ratio
- highly competitive in world markets
- unprotected in domestic markets

The definition of secondary manufacturing adopted in this report closely parallels but does not exactly duplicate that used by the Royal Commission on Canada's Economic Prospects (Gordon Commission) in its special study, Canadian Secondary Manufacturing Industry. Specifically, this report embraces fourteen of the twenty manufacturing industry groups (2-digit) in the Standard Industrial Classification (SIC) Manual of the Dominion Bureau of Statistics (DBS) in their entirety (4 to 7, 9, 11 to 16, and 18 to 20) plus parts of three others (1, 10 and 17).

In detail, the groups included in their entirety are:

04 leather industries

05 textile industries

06 knitting mills

07 clothing industries

09 furniture and fixture industries

11 printing, publishing and allied industries

12 primary metal industries

13 metal fabricating industries

14 machinery industries

15 transportation equipment industries

16 electrical products industries

18 petroleum and coal products industries

19 chemical and chemical products industries

20 miscellaneous manufacturing industries

The groups included in part are:

01 food and beverage industries

10 paper and allied industries

17 non-metallic mineral products industries

Primary manufacturing in Nova Scotia consists of parts of industry groups 01, 10 and 17 and all of group 08 (wood industries). Actually, some "secondary" wood industries such as coffin manufacturers do exist in the province but it has not been possible, using the published statistics, to separate them. The primary manufacturing industries are discussed in the agriculture, fisheries, forestry and mining sector plans.

Only two of the SIC industry groups -- 02 (tobacco products industries) and 03 (rubber industries) -- are not represented in Nova Scotia.

II. SECTOR TRENDS, 1947 TO 1964

SECTOR EMPLOYMENT

Secondary manufacturing employment stood at 20,790 in 1964, an increase of only 1,000 or five per cent from 1947. Total employment fluctuated within narrow limits over this period ranging from a high of 21,780 in 1952 to a low of 18,100 in 1961. Cyclical movements in the provincial figures closely paralleled changes in the pace of economic activity at the national and international levels, reflecting the heavy dependence of provincial production on markets outside the province. It will be noted in Table 1 that total employment exceeds the 1947 level only six times during the 17 year period shown. This would suggest a general lack of buoyancy in the sector. Trends in the sector components as will be outlined later confirm this point and highlight it much more clearly.

The cyclical upturn which began in 1961 resulted in 2,700 new secondary manufacturing jobs in Nova Scotia by 1964. Here we have a striking demonstration of the most important determinant of the future growth of secondary manufacturing in the province -- the general level of economic activity in Canada and in international markets. Growth in the national economy and elsewhere began to accelerate in 1961. This made it possible for existing industries in Nova Scotia to expand, particularly those such as iron and steel and railroad rolling stock which are strongly influenced by cyclical movements at the national and international levels. It also created the conditions under which new industries were attracted to the province.

Table 1. EMPLOYMENT TRENDS IN THE SECONDARY MANUFACTURING SECTOR, NOVA SCOTIA, 1947 to 1966

Employment

Year	I Number	I Index (1947=100)	II Number	II Index (1947=100)
1947	19,770	100	19,460	100
1948	19,510	100	19,520	100
1949	18,150	92	18,360	92
1950	18,700	94	18,520	96
1951	19,830	101	19,650	101
1952	21,780	110	21,470	110
1953	20,020	100	20,610	106
1954	19,350	98	19,050	98
1955	19,750	100	19,490	100
1956	20,000	102	19,900	104
1957	20,250	104	20,240	104
1958	18,930	96	18,650	96
1959	18,440	95	18,170	95
1960	18,760	95	18,490	95
1961	18,100	92	18,020	93
1962	18,890	96	18,520	96
1963	19,750	100	19,540	100
1964	20,790	105	20,490	105

Note: I includes working owners and partners.
II excludes " " " "

Comments and Sources:

1. Employment data for secondary manufacturing in Nova Scotia are not published by DBS as such. They must be computed.

2. Manufacturing data from DBS are subject to a three-year time lag.

3. The Dominion Bureau of Statistics has just completed a series of major conceptual changes involving its manufacturing data. The 1960 figures were presented on the basis of a new Standard Industrial Classification. The 1961 data were based upon the new SIC plus a new "establishment" concept. A new "total activity" concept was introduced with the 1962 figures. These three changes have made it extremely difficult to maintain comparability in the data.

4. With complicated and time-consuming procedures, it proved possible to revise earlier total sector employment data on the basis of the latest conceptual changes. As will be indicated in detail in Chapter II, similar attempts at the 2-digit, industry group level were less successful.

5. Data for the period, 1947-62, are based upon DBS 31-203 (1962) and various issues of 31-204.

6. The figures for 1963 and 1964 are based upon 31-203 (1962), 31-204 (1962 preliminary) and 72-203.

SECTOR VALUE ADDED

Value added data are not published for the secondary manufacturing sector in Nova Scotia as such. The figures given in Table 2 were computed from data published on all manufacturing.

A brief technical note is useful at the outset to acquaint readers with the value added concept and to indicate the methods used in developing the estimates.

Value added (or, as it is sometimes called, net value of production) is derived by subtracting from the gross value of shipments (or output) for an industry the cost of fuel, electricity, materials and supplies used by the industry in its production process. Thus, value added data measure only "new" production. Gross value of shipments data in effect measure both "old" (or purchased) and "new" production. The value added in an industry is the source of all salaries and wages, profits, depreciation, interest, rent and so on. As such, it is clearly a much more meaningful indicator of the level of economic activity than gross value of shipments.

The same complicated procedures used to develop comparable historical data on employment were followed in the case of the value added series shown in Table 2. Again, the objective was to present comparable data incorporating the 1960 Standard Industrial Classification and the new establishment and total activity concepts.

It should be noted finally that all value added figures in this report are expressed in current dollars. Appropriate deflators are not readily available at the provincial level. Underlying trends in the data, of course, emerge much more clearly when constant dollars are used but this refinement, while desirable, is not felt to be critical to the analysis which follows.

Value added (total activity concept) totalled $153 million in 1964. In 1947, it was $56 million. Growth was not steady over the intervening

years however with cyclical downturns being experienced in 1950, 1953, 1958 and 1961. As with employment, these turning-points correspond roughly to those displayed at the national and international levels.

Table 2.
TRENDS IN VALUE ADDED,
SECONDARY MANUFACTURING SECTOR,
NOVA SCOTIA, 1947 TO 1964

	Value Added			
	Manufacturing Activity Concept		Total Activity Concept	
Year	$'000 (current)	Index (1947=100)	$'000 (current)	Index (1947=100)
1947	55,020	100	56,460	100
1948	62,040	113	63,660	113
1949	66,260	120	68,000	120
1950	63,340	115	65,000	115
1951	77,400	141	79,420	141
1952	84,670	154	86,890	154
1953	82,860	151	85,030	151
1954	84,060	153	86,260	153
1955	90,450	164	92,820	164
1956	103,520	188	106,230	188
1957	113,800	207	116,780	207
1958	107,740	196	110,560	196
1959	110,880	202	113,780	202
1960	122,890	223	126,120	223
1961	113,900	207	117,090	207
1962	123,740	225	126,940	225
1963	130,860	238	134,340	238
1964	149,190	271	153,150	271

Note: The manufacturing activity concept is distinguished from the total activity concept in the following way: only value added through manufacturing is included in the former while the latter includes value added through manufacturing plus value added through any other activity, e.g., construction, undertaken by the establishment. Both series tend to move in the same direction.

Comments & Sources: See Table 1, plus DBS 31-001 (July, 65)

SECTOR PRODUCTIVITY

Value added per employee is a measure of productivity. Productivity data computed from Tables 1 and 2 are discussed in this section. It should be noted again that the calculations are based upon current dollars which tends to inflate the "real" increase in productivity which has occurred during the post-war period.

Value added per employee in the secondary manufacturing sector in Nova Scotia in 1964 was $7,470. In 1947, it was $2,900.

Average annual productivity growth rates for different time periods were:

1947-64	5.7 per cent
1954-64	5.1 per cent
1959-64	3.6 per cent
1961-64	4.4 per cent

It appears that the rate of increase was highest during the late 1940's and early 1950's. This is not unexpected (a) because inflationary trends were strongest during these years due, first, to the impact of pent-up demand from World War II and, second, to the Korean war, and (b) because there was only one mild recession during this period to pull down the average rate of growth. In contrast, there was relatively little inflation and a severe recession (1960-61) during the seemingly slow-growth period, 1959-64.

EMPLOYMENT BY INDUSTRY GROUP

Employment changes at the industry group level during the post-war period are outlined in this section. The quality and quantity of the data used are uneven but sufficient to reveal significant trends and relationships.

A great deal of time has been spent trying to construct historical series for the relevant industry groups on the same basis as the sector employment series shown in Table 1. The results of this effort are presented in Table 3. It has not been

Table 3. EMPLOYMENT TRENDS IN SECONDARY MANUFACTURING AT THE 2-DIGIT OR INDUSTRY GROUP LEVEL OF THE STANDARD INDUSTRIAL CLASSIFICATION NOVA SCOTIA, 1947 to 1964

Employment by Industry Group

Year	01	05	06	07	09	10	11	13	14	15	17	18	20	04,12, 16,19	Totals	Table 1 Totals	% Variation Between Tables 1 and 3
1947	2,620	1,130	1,110	620	130	N.A.	N.A.	N.A.	N.A.	4,220	N.A.	N.A.	N.A.	N.A.	9,830		
1948	2,780	950	1,120	490	180	"	"	"	"	3,880	"	"	"	"	9,400		
1949	2,850	700	1,010	600	190	160	1,310	"	"	3,740	"	440	"	"	11,000		
1950	2,830	650	640	740	180	190	1,230	"	"	3,010	"	420	"	"	9,890		
1951	2,770	800	810	570	190	180	1,250	"	"	4,100	"	420	"	"	11,090		
1952	3,020	740	780	660	230	210	1,250	"	"	5,400	"	420	"	"	14,710		
1953	2,950	540	870	610	250	210	1,220	2,270	150	5,360	"	420	"	"	15,010		
1954	3,020	480	750	570	290	240	1,270	2,250	140	5,850	"	400	"	"	14,060		
1955	3,090	470	780	480	290	240	1,290	2,320	130	4,940	"	400	"	"	13,910		
1956	3,010	510	970	410	300	250	1,590	2,220	130	5,330	"	400	"	"	14,960		
1957	3,000	510	1,000	400	310	280	1,900	1,960	570	5,420	220	420	170	5,910	21,570	20,550	+5.0
1958	2,990	480	910	350	300	290	1,590	1,760	290	4,540	240	410	160	5,300	19,410	18,930	+2.5
1959	3,030	480	1,090	360	290	290	1,400	1,710	280	4,070	290	400	150	4,840	18,680	18,460	+1.2
1960	3,170	530	1,170	330	310	320	1,400	1,830	410	3,770	310	370	230	5,390	19,240	18,760	+2.6
1961	3,110	520	1,220	360	330	270	1,360	1,460	380	3,520	330	330	250	4,470	18,110	18,100	
1962	3,240	(520)	1,230	370	270	320	1,400	1,680	390	4,290	290	310	220	4,360	18,890	18,890	
1963*																	
1964*																	

* not available.

Notes:
1. All numbers have been rounded to emphasize the fact that they are estimates, not actual counts.
2. N.A. means not available; ( ) indicates residual.
3. All numbers include working owners and partners.
4. Data sources - essentially the same as given for Table 1.
5. Industry group codes: 01 foods & beverages; 04 leather goods; 05 textiles; 06 knitting mills; 07 clothing; 09 furniture and fixtures; 10 paper products (SIC 273 & 274); 11 printing & publishing; 13 primary metals; 14 metal fabricating (exc. machinery & transport equipment); 14 machinery (exc. electrical machinery); 15 transportation equip.; 16 electrical products; 17 non-metallic mineral products (exc. clay products); 18 petroleum and coal products; 19 chemicals & chemical products; 20 miscellaneous.

possible to develop comparable data for all industry groups for all years because of the confidential nature of some of the information and because of changes in the way in which the statistics have been published. Also, it will be noted by looking at the last three columns in the table that the accuracy of the estimating procedures used deteriorates as one moves backwards through time. Nevertheless, it is felt that the table contains enough information of sufficient accuracy to show meaningful trends in most of the important components of the sector.

The most important secondary manufacturing industry groups in Nova Scotia during the post-war period in terms of employment were transportation equipment, primary metals and foods and beverages. Together, they accounted for over half of the total employment in the sector.

Two industries -- shipbuilding and railroad rolling stock -- dominated the transportation equipment industry group.

Shipbuilding developed into a major industry overnight during World War II. Demand was very strong and costs assumed a secondary role. Halifax Shipyards Limited, a subsidiary of the giant Dominion Steel and Coal Corporation Limited (DOSCO), and the largest firm in the industry, built the first destroyers constructed in Canada during the war. Cessation of hostilities brought about a rapid decline in employment but outbreak of war in Korea in 1950 sparked another surge of activity. This was followed by a gradual decline from the mid-1950's till the end of the decade. Employment has stabilized in recent years between 2,000 and 2,500 but the volume of work has become less defence-oriented (chiefly repairs), and less dependent on government contracts generally, with an increase in the importance of commercial fishing vessel orders. The industry has been heavily subsidized by the Federal Government in various ways as part of a policy, apparently based largely upon security considerations, of maintaining shipbuilding facilities in a state of readiness at various points throughout the country.

The railroad rolling stock industry consists of DOSCO's Trenton Works which encompass more than 1 million square feet of factory space. The industry was developed originally in response to a heavy demand for railway equipment during the golden age of railroad construction preceding World War I. It has never been very healthy since this era came to an end in 1913 with the exception of brief periods during cyclical expansions in the economy. Employment increased rapidly after World War II on the basis of urgent requirements by the railways which had postponed major investment programmes during the war years. The 1950's saw a return to the traditional pattern in the industry with the business cycle producing tremendous fluctuations in output and employment.

The primary metal industry group is dominated by DOSCO's huge Sydney Steel Works. This complex developed rapidly during the railway era at the turn of the century to supply steel rails and some of the steel required by the rolling stock industry. It failed to diversify when the railway boom terminated in 1913, however, because of its isolated location relative to the major Canadian markets for fabricated steel products in Ontario and Quebec and because of tariff barriers to many types of steel exports. Its chief domestic competitors were located in Ontario and it was confronted with high transportation costs in marketing its output and with high-cost coal and iron ore inputs and metallurgical problems in the utilization of these inputs. Thus DOSCO's Sydney Works has been, and remains basically, a primary steel producer. DOSCO is a highly integrated operation with the steel works drawing upon other DOSCO subsidiaries for the bulk of its raw materials. Close to $150 million was invested by the company during the post-war period with a considerable amount of the money being spent in Nova Scotia. Steel ingot capacity at Sydney was increased by 33 per cent from the 1944 level, from 750,000 net tons to 1 million net tons a year. Capacity employment, however, decreased in the face of sharp productivity increases from a peak of roughly 5,800 in 1952 to about 3,600 in 1964. Output during the post-war period consisted of steel ingots, rods, bars, billets, wire, nails, and rails with particular emphasis on the latter. Markets were predominantly

domestic although steel rails and other products were exported in considerable quantities. Employment fluctuated sharply with the business cycle. During the current cyclical expansion it has risen by more than 800.

In contrast, employment in the foods and beverages industry group was remarkably insensitive to cyclical fluctuations during the post-war period. Markets were largely provincial and regional, with the exception of the confectionery industry, and growth in output was closely related to population trends. Over one-quarter of total employment was provided by bakeries. Other important employment sources were confectionery and soft drink manufacturers, breweries, and slaughtering and meat packing plants.

It was noted above that total secondary manufacturing employment grew very little between 1947 and 1964. This was due in large part to the overall lack of growth in the three major industry groups. Employment in the transportation equipment industry group was the same towards the end of the period as at the beginning. Data are not available for the primary metals group as a whole because of the secrecy provisions of the Statistics Act, but there is evidence to indicate that employment contracted by 10 per cent to 15 per cent. Employment from the production of foods and beverages increased relatively steadily but slowly at an average annual rate of 1.4 per cent.

Two additional important industry groups -- knitting mills and printing and publishing -- failed to increase their demand for labour appreciably between 1947 and 1964. Knitting mills in Canada were hard hit by import competition during the early and mid-1950's as a result of the premium on the Canadian dollar at that time, an inappropriate domestic tariff structure, and greatly increased efficiency in many foreign mills newly reconstructed after the war. Employment in Nova Scotia mills plummeted from 1,100 in 1947 to 600 in 1950 but it recovered within a decade. Total Canadian employment, however, has remained considerably below peak post-war levels. Activity in the printing and publishing industry group is governed largely by commercial and population

developments in the province and the demand for labour fluctuates little.

Employment fell in five industry groups (apart from primary metals) during the post-war period. These were textiles, clothing, metal fabricating, chemicals and chemical products, and as far as can be determined given the nature of the data, leather goods. (Employment in this latter group is estimated at less than 100.) The most severe decline occurred in textiles where employment was more than halved between 1947 (1,130 employees) and 1955 (470). It had risen again only slightly by 1962. Severe import competition was again the cause of the decline. During the early 1950's, some 69 primary textile mills closed in Canada and employment fell by 21,000 or 22 per cent. Nationally, the industry entered a new phase in 1961 as a delayed result of two developments during the 1950's: the introduction of man-made, synthetic fibres on a large-scale basis and continuous heavy investment in new and more efficient plant and machinery. Import competition was further reduced by the devaluation of the dollar in 1962. These developments began to have a visible impact on employment in the Nova Scotia industry in 1960. The official 1964 figures, when available, should show a further significant employment increase.

Six industry groups grew appreciably in percentage terms between 1947 and 1964 but the total number of new employees involved was relatively small. Employment doubled in the furniture, paper products and machinery groups. The non-metallic mineral products and miscellaneous groups grew considerably less quickly. Employment data for the petroleum and coal products group are officially confidential. Considerable new plant capacity was added, however, during the post-war period. Imperial Oil Ltd., the major firm in the group, modernized and expanded its Dartmouth refinery during the mid-1950's while Texaco Canada Ltd. opened a new (considerably smaller) refinery nearby at Eastern Passage in 1964. Total 1964 employment in this group is estimated at 500.

Only one industry group -- electrical products -- was added to the secondary manufacturing

sector during the 1947 to 1964 period. Again, employment figures are officially confidential but the history of this group can be pieced together. There were three firms in the group in 1964 -- EMI Cossor Electronics Ltd., Surrette Battery Co. Ltd., and Phillips Electrical Co. Ltd. -- with an estimated total employment of 540. The first electrical products company to locate in the province was Cossor (Canada) Ltd., a branch of a British firm designing and producing electronic equipment. It was attracted by the possibility of defence contracts and established a plant in Dartmouth in 1949. In 1958, it merged with another British firm, Electrical Musical Industries Ltd., in the hope of extending its products and activities and to lessen its dependence on defence orders. Expansions were undertaken in 1959 and 1962. The plant floor area was increased to 66,000 sq. ft. and employment to approximately 475. Phillips produces wire and cable. Surrette makes batteries. Both began production in 1960.

Two points remain to be noted in this brief review of the post-war history of the secondary manufacturing sector.

The first is the overwhelming importance of DOSCO both for the sector and for the provincial economy as a whole. DOSCO alone employed more than 25 per cent of all secondary manufacturing employees during the post-war period. The majority worked in industries subject to great cyclical fluctuations in output and employment. DOSCO's total employees in Nova Scotia numbered more than 14,000 in 1962. The largest single company enterprise was coal mining. Total company expenditures in the province on goods, materials and labour exceed $125 million annually. The relative significance of the firm diminished between 1947 and 1964 as a result of reduced employment in coal and steel, but it remains a highly important element in the economy.

The second point to be noted is the historical importance of defence spending for employment in the secondary manufacturing sector. Major firms heavily dependent on defence contracts include Halifax Shipyards (approximately 1,200 employees) and Fairey

Aviation Co. of Canada Ltd. (approximately 800 employees). The latter repairs aircraft and makes aircraft parts. Two other important firms -- EMI Cossor and Imperial Oil -- are less dependent on sales to the Department of National Defence today than in the past but still find defence orders account for a considerable portion of their business.

Table 4 summarizes the historical perspective portrayed in this section. Average annual rates of employment growth are presented by industry group for different time periods.

Table 4. AVERAGE ANNUAL RATES OF EMPLOYMENT GROWTH IN SECONDARY MANUFACTURING INDUSTRY GROUPS (2-DIGIT), NOVA SCOTIA, VARIOUS TIME PERIODS

Industry Group	Time Period 1947-62 (15 years) %	1952-62 (10 years) %	1957-62 (5 years) %	1960-62 (3 years) %
01	1.4	0.7	1.6	2.2
05 (1947-61)	-5.7	-4.4	0.5	3.0
06	0.7	4.7	4.4	4.2
07	-3.5	-6.0	-1.6	0.8
09	5.2	1.7	-2.8	-3.0
10 (1949-62)	5.5	4.0	2.7	2.7
11 (1949-62)	0.5	1.1	0.1	-0.1
13 (1953-62)		-3.4	-3.1	-0.8
14 (1953-62)		11.2	-7.8	12.0
15	0.1	-2.3	-4.8	1.3
17 (1957-62)			5.8	-0.4
19	-2.7	-3.2	-8.2	-9.3
20 (1957-62)			5.5	13.9
04,12) (1957-62) 16,18)			-6.3	-3.6

Source: Computed from Table 3.

Industry Group Codes:

01 foods & beverages
04 leather goods
05 textiles
06 knitting mills
07 clothing
09 furniture & fixtures
10 paper products
11 printing & publishing
12 primary metals
13 metal fabricating
14 machinery
15 transportation equipment
16 electrical products
17 non-metallic mineral products
18 petroleum and coal products
19 chemicals & chemical products
20 miscellaneous

III. ADDITIONS TO SECTOR CAPACITY, 1958 TO 1965, AND THE ROLE OF INDUSTRIAL ESTATES LIMITED AND THE AREA DEVELOPMENT AGENCY

INTRODUCTION

This Chapter indicates in detail the nature of the new secondary manufacturing capacity built in Nova Scotia since 1957 and the direct role played by two key development agencies, Industrial Estates Limited (IEL) and the more recent Area Development Agency (ADA) of the Canada Department of Industry, in encouraging and facilitating the construction of new sector capacity.

Examination of the industrial distribution of recent additions to the province's secondary manufacturing base gives some indication of likely developments during the period of the First Plan.

Industrial Estates Limited was incorporated September 25, 1957, as the main industrial development arm of the Nova Scotia Government. It has played a prominent part in attracting new industry to the province and in encouraging the expansion of existing industry during the past eight years. The ensuing analysis attempts to place that performance in the perspective of the total additions to the secondary manufacturing base during the same period as a guide to the effort which will be required of IEL if the sector employment target is to be achieved.

The Area Development Agency was established by the Federal Government to administer the programme of tax incentives for designated areas introduced in the budget of June, 1963. The tax incentives were designed to stimulate the establishment of "new manufacturing and processing businesses" in those areas of high unemployment and slow economic growth designated by ADA. Originally, thirty-five areas were designated in Canada. Seven, or one-fifth, were located in Nova Scotia: Amherst, Inverness, Liverpool, New Glasgow, Springhill, Sydney and Sydney Mines. Their boundaries corresponded in all cases to those of the National Employment Service local office areas. They encompassed in total approximately 54 per cent of the

provincial land area, 39 per cent of the population and 36 per cent of the labour force.

On August 5, 1965, a new and expanded ADA programme was announced. The criteria governing the designation of areas were revised and broadened to include areas characterized by low family incomes and/or slow employment growth and high and chronic unemployment. Nationally, some 16 per cent of the labour force are covered by the new scheme compared to a coverage of 7.5 per cent under the former one. In Nova Scotia, four National Employment Service office areas -- Bridgewater, Kentville, Truro and Yarmouth -- have been added to the seven designated previously. The programme now covers the entire province with the exception of a portion of Halifax County including metropolitan Halifax-Dartmouth and extending eastwards to the Tangier-Upper Musquodoboit Road. This exclusion involves only six per cent or so of the provincial land area but 31 per cent of the population and 35 per cent of the labour force.

The impact of the ADA programme to date in Nova Scotia is analyzed in detail later in this Chapter. Again, the objective is to provide some indication of the role ADA might be expected to play in ensuring that the secondary manufacturing employment target is met.

NEW SECTOR CAPACITY

New capital investment in plant, and machinery and equipment, is perhaps the best single measure of new industrial capacity. Given this measure plus appropriate capital/output ratios, employment estimates can be obtained using various productivity assumptions. Unfortunately, published data on new capital investment in manufacturing for Nova Scotia refer only to total manufacturing. There has not been time to try to break down these figures into their primary and secondary manufacturing components. Thus, we have had to use alternative and less accurate capacity measuring tools -- namely, the number of new plants and plant expansions and their employment implications.

Some 56 new secondary manufacturing plants have been brought into production in Nova Scotia since 1957 together with 30 plant expansions. More than 2,200 new jobs have resulted. The completely new plants have provided over 80 per cent of these jobs with an average of 34 workers per plant. Average new employment resulting from the plant expansions has been only 12.

It will be recalled from Chapter II of this report that secondary manufacturing sector employment in 1962 totalled 18,890. There were 483 establishments for an average of 38 workers per establishment. This would suggest that the new plants built since 1957 are slightly below the sector average in size. In number, however, they comprise 11 per cent of the total number of establishments in 1962 (assuming that the "plant" and "establishment" concepts used here are basically similar).

The new additions to the secondary manufacturing sector cover a wide variety of industries and products -- indeed, every industry group is represented except printing and publishing. Certain groups stand out; this could indicate above-average growth potential on their part. Metal fabricating plants, for example, were the most numerous in terms of both new plants and plant expansions. Furniture manufacturing was the most important single source of new employment due largely to the new plant of Clairtone Sound Corp. Ltd. at Stellarton. Textile production was a close second followed by electrical products and foods and beverages. These four groups together accounted for 62 per cent of all new employment. Transportation equipment, one of the major industry groups historically, was responsible for eight per cent of the new jobs. Primary metals, however, another major group historically, produced only five new jobs through the addition of new manufacturing capacity although there were four plant expansions and one new plant. This would suggest a rapid substitution of capital for labour in this key industry group and a limited growth potential in terms of employment despite rising output.

Detailed data on new sector capacity are

presented in Tables 5 and 6. The 1965 figures are segregated in Table 6 to illustrate in part the progress achieved in meeting the sector employment target for the year of 1,300 new jobs. It should be noted that the new plant and plant expansion data represent the best estimates of the Nova Scotia Department of Trade and Industry. There may be omissions but they are likely of a minor nature. The employment figures are probably much less accurate. Many are arbitrary, and some are little more than educated guesses. Still it is felt that they portray realistic magnitudes and trends. Plants under construction in 1965 are excluded. Also excluded are new plants ceasing production since 1957. There were nine of these altogether involving some 115 workers. The chief casualties were in the furniture and non-metallic mineral products groups.

THE ROLE OF INDUSTRIAL ESTATES LIMITED

Industrial Estates Limited is a non-profit provincial crown corporation charged with the responsibility of promoting the development of "secondary industry". This latter term is used in much of the corporation's publicity material and it appears useful at this stage to clarify its meaning thereby avoiding misunderstandings and ambiguities in the ensuing discussion.

Industrial Estates Limited has never interpreted "secondary industry" to mean "secondary manufacturing" exactly as defined in this report. Initially the corporation focussed its promotional efforts on industries which were small, "light", labour-intensive and "footloose", but resource-oriented in the broadest sense, including the human resource. More recently, its interests have broadened to include larger, "heavier" industry such as Deuterium of Canada Ltd. and Maritime Cement Co. Ltd. Today, it is probably fair to say that IEL is interested in promoting the whole spectrum of manufacturing activity. The term "secondary industry" has become increasingly ambiguous and might well be dropped in favour of simply "manufacturing".

Industrial Estates Limited has two specific

Table 5. NEW SECONDARY MANUFACTURING PLANTS AND PLANT EXPANSIONS ENTERING PRODUCTION IN NOVA SCOTIA, 1955 to 1964, AND THE ROLE OF INDUSTRIAL ESTATES LIMITED

Industry Group	New Plants				Plant Expansions			
	No.	Total Employment	IEL-assisted No.	IEL-assisted Employment	No.	Total Employment	IEL-assisted No.	IEL-assisted Employment
01 Foods & Beverages	3	220			3	20		
05 Textiles	5	390	2	150	-	-		
06 Knitting Mills	3	55	2	50	-	-		
07 Clothing	1	25			-	-		
09 Furniture	1	5			2	7		
10 Paper Products	5	81	2	61	1	10		
12 Primary Metals	1	3			3	2		
13 Metal Fabricating	8	106	2	65	6	30	2	7
14 Machinery	-	-			1	0	1	0
15 Transport Equipment	3	160	1	130	2	5	2	5
16 Electrical Products	2	55	2	55	3	260	2	60
17 Non-Metallics	4	80	1	50	4	19	4	19
18 Petroleum Products	2	120			-	-		
19 Chemical Products	3	65	1	25	1	2		
20 Miscellaneous	7	22			-	-		
TOTALS	48	1,387	13	586	25	345	11	91

Sources: Department of Trade and Industry
Industrial Estates Limited

Table 6. NEW SECONDARY MANUFACTURING PLANTS AND PLANT EXPANSIONS ENTERING PRODUCTION IN NOVA SCOTIA IN 1965 AND THE ROLE OF INDUSTRIAL ESTATES LIMITED

Industry Group	New Plants				Plant Expansions			
	Total		IEL-assisted		Total		IEL-assisted	
	No.	Employment	No.	Employment	No.	Employment	No.	Employment
01 Foods and Beverages	1	10	-	-	1	0	-	-
04 Leather Goods					1	10	1	10
07 Clothing	1	10						
09 Furniture	1	400	1	400				
10 Paper Products					1	5	1	5
12 Primary Metals					1	0	-	-
13 Metal Fabricating	2	33	-	-				
15 Transport Equipment	2	12	-	-				
19 Chemical Products					1	5	-	-
20 Miscellaneous	1	3	-	-				
	-	---	-	---	-	---	-	---
TOTALS	8	468	1	400	5	20	2	15

Sources: Department of Trade and Industry
Industrial Estates Limited

objectives: the attraction of new manufacturing industry to Nova Scotia, and the expansion of existing manufacturing enterprises. It is not allowed to assist new firms such as Moosehead Breweries Ltd. of Lancaster, New Brunswick or Continental Can Company of Toronto, Ontario, which compete directly with established Nova Scotia manufacturers. Neither is it allowed to assist existing firms which wish only to modernize and not necessarily to expand.

Various forms of assistance are available to prospective clients. Industrial Estates Limited will help survey markets and select sites; buy land and design and build plants to clients' exact specifications; provide long-term leasing arrangements extending from 10 to 20 years on a non-profit, non-loss basis with an option for the client to buy at book cost at any time; help finance up to 60 per cent of the installed cost of machinery and equipment; negotiate municipal tax arrangements; and so on. Indeed, eligible new industries need little more than working capital to get along.

Although it is government-financed, IEL operates like an independent private company. It stresses the confidential nature of its relationships with clients and suggests that freedom from direct government control is responsible for much of its success.

It does not operate with a master plan of the ideal industrial structure for the province. Rather, its approach and philosophy are governed by one key consideration -- the need for flexibility and pragmatism.

Direct mail and personal contact are the two main promotional devices used, supplemented by limited advertising, four-language brochures, films and speeches. While the corporation's sales approach is continually updated and revised, three main arguments are stressed: the existence of a regional market of 2,000,000 people, the assistance provided by the Maritimes Freight Rate Act to firms marketing nationally, and the benefits of year-round ports to firms wishing to assemble imported materials, particularly

those of European origin, in Canada.

Some 43 plants have been assisted to date by IEL or an average of five to six per year. About half have been expansions to existing firms. The remainder are owned by national and international companies locating in Nova Scotia for the first time. A wide variety of manufactured goods are involved including automobiles, heavy water, cement, carpets, aluminum cans, batteries, electronic components, prefabricated buildings, prestressed concrete beams and poles, electrical wire and cable, envelopes, frozen foods, knitted goods, specialized textile fabrics, boats, etc. The importance of this list is that it suggests strongly that the locational advantages of Nova Scotia are not confined to a limited range of industrial activity involving special technical considerations such as unique resources.

Long-term, new employment in IEL-assisted plants is difficult to estimate accurately but it has been placed at about 3,000 as of the end of 1965. This figure will increase as plants now under construction are completed and brought into production.

It is even more difficult to estimate the amount of capital expended by IEL. The Provincial Government made $12 million available to IEL initially. By the end of 1962, $10 million of this amount had been committed. To be safe, and in view of IEL's record of achievement, the Provincial Government increased the corporation's capital supply to $18 million in 1963. A major policy change was made that year when IEL decided to acquire more than 50 per cent of the equity shares of Deuterium of Canada Ltd. and to provide $12 million out of the estimated $30 million investment required for the plant, the first commercial heavy water operation in the world. This was the first major equity venture for the crown corporation. It came at the end of 1963, the most successful year in its short history. Twelve new plant agreements were signed in total, involving a capital commitment of some $22 million. Thus, IEL entered 1964 with commitments in the vicinity of $32 million and the Provincial Government took steps to increase its capital supply again, this time to $50

million.

Since then, IEL has loaned Clairtone $7.9 million (November, 1964) to pay off a debenture issue and to build a new $3.5 million factory. A further $1 million was advanced to Clairtone (March, 1965) to enable it to buy a controlling interest in Canadian Motor Industries Ltd. which proposes to build an auto assembly plant at Sydney at a cost of up to $4 million with IEL assistance. Industrial Estates Limited has agreed to finance a new $7 million hardboard plant for Anil Canada Ltd. and a new $250 thousand, 12,000 sq. ft. tanning oils processing plant for Marden-Wild Canada Ltd. Other commitments have also been made since 1963 including a new building, recently completed, for Christie Trunk and Bag Co. Ltd. Furthermore, it has been reported recently that the heavy water plant being built at Glace Bay will in fact cost more than the original estimate of $30 million and that IEL will probably have to shoulder the extra cost.

It can probably be assumed therefore that IEL has committed close to $50 million in order to ensure employment for the 3,000 people estimated to be working in IEL-assisted plants at the end of 1965 plus the 200 to be employed by the heavy water plant when it opens in July of this year. This works out to an average fixed capital investment of $15 thousand to $16 thousand per job. This figure is very rough but, in the absence of more detailed information, it can be used without distorting realities too far.

It is clear that IEL's capital supply will need to be increased again in the near future above the current $50 million level if the corporation is to honour existing commitments and to continue to promote the growth of manufacturing in the province.

Earlier it was pointed out that not all of the IEL-assisted plants can be classified as secondary manufacturing enterprises. It is estimated that out of a total of some 39 plants in production at the end of 1965, 30 or three-quarters were engaged in secondary manufacturing.

In Tables 5 and 6 the industrial distribution of IEL-assisted secondary manufacturing plants entering producting since 1957 are listed together with the number of new employees involved, and IEL's contribution to sector growth is placed in perspective as to the total additions to sector capacity, since IEL was established in 1957. Three IEL-assisted secondary manufacturing plants, namely, Glasgow Metals Ltd., Industrial Shipping Co. Ltd., and Rhuland Industries Ltd., have been excluded from Table 5 because it was felt that they did not represent new sector capacity but simply changes in ownership. Thus, the combined total of IEL-assisted plants in the two tables is 27.

Employment in the IEL-assisted plants included in the tables totals approximately 1,100. This figure is arbitrary and was arrived at via a different process than the 3,000 figure given above representing total employment in all IEL-assisted plants as of the end of 1965. Thus, to some extent these two figures are probably not strictly comparable.

All data in Tables 5 and 6 are roughly comparable, however, and they portray some highly interesting relationships. It will be noted, for example, that IEL assisted only 14 or 25 per cent of the 56 new secondary manufacturing plants entering production in Nova Scotia since 1957. It assisted 43 per cent of the plant expansions. One suspects that these findings run contrary to the popular conception of the role of IEL as the only important instigator of new manufacturing activity in the province in recent years. By doing so, they give grounds for great encouragement concerning the future growth prospects of the sector and the means of attaining growth for it appears that government agencies will not be called upon to shoulder the entire burden of ensuring that the sector employment target is met. This conclusion is borne out by an examination of the employment data in the tables. Plants assisted by IEL provided 53 per cent of the employment in the new plants but only 29 per cent of the workers in the plant expansions.

Average employment in IEL-assisted new plants was twice the average for all new plants.

Average employment in IEL-assisted plant expansions, however, was only two-thirds of the average for all plant expansions.

It is clear that autonomous (i.e. not directly assisted by government) growth forces have been at work in Nova Scotia and there is every reason to expect that they will become stronger as the province's industrial climate continues to improve. This conclusion remains valid despite the fact that IEL played a much more prominent role in 1965 in terms of new employment than in the period 1958 to 1964 due in large part to a single new plant -- that of Clairtone. These autonomous forces have manifested themselves to date, and will probably continue to do so in future, in the form of small new plants and plant expansions which serve to increase employment, to broaden the industrial base, and to render the economy less vulnerable to shifts in demand, but at the same time, do not stir the imagination or attract much interest from outside the province. This would lend support to the important shift in IEL policy made in 1963 when it was decided to concentrate less upon the attraction of small industry and to focus more upon the large, attention-gathering type of enterprise, taking an equity position if necessary, in order to bring industrial operations into the province which would likely not come on their own. Such a policy, if successful, has great publicity and advertising value in part because it is more expensive and more hazardous. More important, however, it is probably the only means open to Nova Scotia to diversify its economy in a fairly short time. Implicit in the policy of course, is the key premise that these large new industries will find it profitable to operate in the province over the long term.*

THE ROLE OF THE AREA DEVELOPMENT AGENCY

The programme of the Area Development Agency has been in effect less than three years. Its objectives are quite different from those of IEL yet they amount in many ways to the same thing -- the attraction

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* See footnote bottom of next page

of new manufacturing industries to the province and the expansion of existing manufacturing industries. It is important to understand the differences between the two programmes in order to assess the probable role that each will play in the achievement of the employment target set for the secondary manufacturing sector for the First Plan period. The programme and record of IEL to date were examined in considerable detail in the previous section. This section scrutinizes the programme and record of ADA.

As was indicated earlier, ADA's original tax incentive programme was applicable to only half of Nova Scotia. It featured three forms of benefit:

1. a three-year exemption from federal and provincial income tax;

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* An industrial development policy similar to that adopted in 1963 by IEL is advocated and justified on theoretical grounds in at least four recent publications, namely:

Arthur C. Parks, The Economy of the Atlantic Provinces, 1940-1958 (Halifax: Atlantic Provinces Economic Council, 1960), p. 154, etc.

A.K. Cairncross, Economic Development of the Atlantic Provinces, (Fredericton: Atlantic Provinces Research Board, 1961), p. 19, etc.

John F. Graham, Fiscal Adjustment and Economic Development: A Case Study of Nova Scotia (Toronto: University of Toronto Press, 1963), pp. 139-142.

Thomas Wilson, Financial Assistance With Regional Development (Fredericton: Atlantic Provinces Research Board, 1964).

2. special capital cost allowances on most new machinery and equipment, i.e., a rate of 50 per cent per year on a straight-line basis compared to the normal rate of 20 per cent on a diminishing-balance basis; and

3. special capital cost allowances on new buildings and significant building extensions, i.e., a rate of 20 per cent per year on a straight-line basis compared to the normal rate (for most buildings) of five per cent on a diminishing-balance basis.

Only "new manufacturing or processing businesses" commencing commercial operations with unused machinery and equipment in a designated area before March 31, 1967 were eligible for benefit. "New manufacturing or processing businesses" were not defined to permit greater flexibility in the administration of the programme. It was stipulated, however, that to be eligible, a business must derive 95 per cent of its revenue from the sale of its own manufactured or processed products. The tax holiday for eligible firms dated from the day that manufacturing or processing "commenced in reasonable commercial quantities".

Some idea of the value of the benefits offered can be obtained from the following examples:

1. new businesses making a profit in their first year of operation could realize a tax saving equal to one-quarter to one-third of their capital outlay;

2. the special capital cost allowances could be taken following the tax exemption period resulting in additional tax savings and releasing funds for working capital purposes; and

3. accelerated depreciation on a building could produce savings on interest charges equal to seven per cent of the

capital cost of the building over a ten-year period.

The original incentive programme will continue to operate till March 31, 1967 despite the introduction of a new and expanded programme effective July 1, 1965. This new programme features a system of capital grants instead of a tax holiday. The grants are available to new manufacturing and processing facilities establishing in designated areas, and to firms already located in these areas and undertaking significant expansions there, providing they begin "reasonable commercial production" prior to March 31, 1971. The amounts of the grants are directly related to the total investment in new buildings and equipment made by eligible enterprises as follows:

1. 33 per cent of the first $250 thousand investment;

2. 25 per cent of the next $750 thousand; and

3. 20 per cent of amounts in excess of $1 million.

The maximum grant available for any one facility is $5 million. Eligible firms beginning production before March 31, 1967 can choose either the tax holiday or a development grant.

Total investment in new capital assets under the original ADA programme exceeds $600 million in Canada to date with more than 20 per cent or $130 million being invested in Nova Scotia and New Brunswick by 32 firms. The Area Development Agency will not divulge separate provincial figures but Federal Forestry Minister Sauve indicated in a Port Hawkesbury political speech on September 29, 1965 that 15 of these firms were located in Nova Scotia involving new capital investment in excess of $40 million. More than 20,000 new manufacturing jobs have resulted directly in Canada; 3,000 of these are in Nova Scotia and New Brunswick. The average investment per new job has been high in Canada ($30 thousand) and in the two Atlantic Provinces ($43 thousand) but the national

figure is only 70 per cent of the regional. In other words, it is taking a significantly greater amount of capital investment to produce one new manufacturing job in the Atlantic Region than in Canada as a whole.

Unfortunately, we do not know the industrial distribution of these new manufacturing facilities. The companies involved do not make public their intention to claim ADA tax concessions and ADA is reluctant to publish the names and plans of specific firms. A partial list was published by The Financial Post, however, on February 13, 1965. It included the names of three highly capital-intensive manufacturing operations in the Atlantic Region -- Deuterium of Canada Ltd. in Nova Scotia and Brunswick Mining and Smelting Corp. and Allied Chemical (Maritimes) Ltd. in New Brunswick. This tends to confirm the impression given by the $43 thousand per job investment figure for the Atlantic Region indicated above that the amount of capital-intensive manufacturing activity stimulated by the tax incentives program has been proportionately higher in Nova Scotia and New Brunswick than in Canada.

It is important to stress that there is not necessarily a difference between the ADA and IEL programmes in terms of the amount of capital investment needed to produce one new manufacturing job although, in actual fact, there has probably been a difference in the past. Companies qualifying for ADA tax incentives have been investing an average of $43 thousand per new job in the Atlantic Region. Industrial Estates Limited has committed some $15 thousand -- $16 thousand on average for each new job in IEL-assisted plants. These two figures are not strictly comparable. The $43 thousand figure refers to total new capital investment. The investment by IEL-assisted plants needs to be added to the $15 thousand to $16 thousand figure to make it comparable. Such information is not available but if it were, it is likely that total per job investment in IEL-assisted plants would turn out to be significantly higher than $16 thousand but not nearly as high as $43 thousand. One guesses that it would approximate the Canadian average under the ADA programme of $30 thousand.

The amount of capital investment in Canada needed to produce one new job in manufacturing is rising rapidly under the impact of higher tax levels, continuing inflation, and increasing mechanization and automation involving the substitution of capital for labour. Figures of $30 thousand or $43 thousand would have appeared fantastic a decade ago but they will almost certainly be considered low a decade hence.

It is interesting to look at the implications for capital investment in Nova Scotia if the employment target for the secondary manufacturing sector during the First Plan period is to be met on the basis of the capital investment per worker data emerging from the analysis of the ADA program. Given a minimum target of 1,000 new jobs per year at $43 thousand per job, $43 million will need to be invested in secondary manufacturing each year. At $30 thousand per job, $30 million per year will be needed. Actual new investment data for total manufacturing (primary and secondary) in Nova Scotia for the years 1963, 1964 and 1965 are $33 million, $38 million and $58 million respectively according to the Canada Department of Trade and Commerce. Clearly, the secondary manufacturing minimum employment target is not going to necessitate unreasonably high levels of new capital investment on the basis of past trends. In other words, the target appears quite realistic from the point of view of the total new capital investment required.

In aggregate terms, the ADA tax incentive programme appears to have had considerable impact and success. Twenty thousand new manufacturing jobs in two years looks impressive although we do not know the cost to government involved in taxes foregone. These jobs represent over three per cent of the combined labour force in the original 35 designated areas.

At the sub-aggregate or individual designated area level, however, the impact of the programme has been far from uniform. Seven areas or 20 per cent of the total number have attracted 50 per cent ($300 million) of the new investment and 45 per cent (9,000) of the new jobs. These areas are all in the Ontario industrial belt from Windsor to Cornwall or in the

Northern Ontario-Quebec mining belt. Meanwhile, other designated areas, less well situated in relation to the existing industrial and market concentrations in Canada, have attracted little or no new manufacturing industry. Thus, to a considerable extent, the ADA programme has tended to reinforce the economies of the more prosperous areas. In this connection, it is difficult, if not impossible, for anyone outside ADA to know to what extent the programme has been responsible for the new investment in designated areas which has qualified for benefits. Certainly, it is not unreasonable to suppose that some of the new investment in the Wallaceburg and Windsor areas of Ontario, for example, might have taken place even in the absence of the programme.

These facts explain the strong criticisms levelled against the original ADA programme by the Provincial Government. It argued that the programme was ineffectual from Nova Scotia's point of view because it did not differentiate in favour of the province. All designated areas in Canada were placed upon an equal footing and those close to the industrial heartland were bound to do better than those at the nation's geographical extremities. The programme was unlikely to create an inflow of industrial capital into Nova Scotia from elsewhere. Indeed, its probable main impact -- the diversion of new investment from the more prosperous and economically viable non-designated portions of the province to the seven designated areas -- was apt to retard the overall development of the provincial economy by discouraging what the Economic Council of Canada in its Second Annual Review calls "efficient agglomerations of activity-growth centres" and leading to "uneconomic scatter".

Here we have an amazing case of conflicting concepts and objectives. Nova Scotia visualizes ADA as a development agency for major geographic areas of Canada, i.e., Nova Scotia, the Atlantic Region, etc., and the ADA programme as an imperfect development tool. The Area Development Agency, in contrast, sees itself one suspects (although it is not openly admitted) as being primarily a welfare agency in disguise. Its purpose has been clearly stated -- it is to help

specific areas suffering from high unemployment, slow growth, and low income through the generation of long-term employment opportunities in those areas. Its programme is not designed to promote economic development as such.

The original four-year programme of ADA has been termed "stop-gap" by agency personnel. It was designed to give immediate assistance to Canada's depressed areas while criteria for area designation and the types of incentive to be offered in a long-term, more permanent programme were evaluated in detail. As noted, its objective was to generate long-term employment opportunities in designated areas. It was felt that an incentive programme featuring a tax holiday would attract only those projects likely to make a profit since only profitable enterprises would be able to benefit from the incentives offered. To this extent, long-term employment would be ensured. The risk of attracting unprofitable ventures, thereby perpetuating the unemployment problem in the designated areas, would be minimized.

A list was published by ADA as part of its promotional material indicating the types of projects or businesses which it felt best fitted the incentives programme. It is instructive to reproduce this list here:

"What types of projects or businesses fit the program best? Generally, any new business which has an established market for its products. Types of undertakings which fit this include:

1. a new plant to serve a regional market which is not large enough. (Authors' note: we do not understand this either);

2. a new plant required by virtue of the diminishing local source of raw materials for an existing plant. (Existing plant could cut back on its production rather than shut down);

3. a new plant required because of

inefficiency of an existing plant (and for which the location is going to be examined by the progressive firm);

4. a new plant of a foreign firm previously exporting to Canada. (Firm can switch its production but still use established marketing channels);

5. a new facility needed because of other factors such as transportation changes, variations in consumer demand such as in Quebec and Ontario;

6. expansion of an existing facility in a designated area; and

7. a sure-fire new product could merit a new plant."

This emphasis on early profitability, the types of incentive offered, and the criteria governing the designation of areas, have been the target of continuous criticism, particularly in the Atlantic Region.

The main criticisms (elaborating on those made by the Provincial Government as mentioned above plus others) have been:

The tax holiday incentive -- A tax holiday for a limited period (e.g., three years) benefits mainly those firms able to make a profit soon after the start of new operations. Many firms experience abnormally high costs during their first few years as they develop markets, train employees, break in machinery, etc. Profits are at best slim during this period but more often they are non-existent. Thus, the incentive effect of a limited tax holiday is likely to be very small. If the tax holiday approach to regional development is to be followed at all, and there are sound arguments against it, the exemption period must extend for six to ten years from the start of a new operation to be of universal significance as a location incentive.

Other types of incentive -- Tax incentives

by themselves are likely to be of only marginal significance in the location decisions of most firms. More important are various forms of direct assistance in the establishment of new plants such as capital grants or loans, industrial parks, advance factories, sharing the cost of training new workers, helping workers and their families to move, provision of housing, etc. Most important, however, are measures designed to reduce long-term operating costs by improving the nature and quality of the plant's environment. Under this heading would come such items as low-cost power, efficient transportation networks, land use planning, town and regional planning, integrity and efficiency in government, good educational and health facilities, adequate and varied recreational facilities, good shopping outlets, and so on -- in short, comprehensive area development.

The criteria governing the designation of areas -- High and chronic unemployment and slow economic growth are inadequate criteria for selecting the areas to which a development programme should apply. Reference must also be paid to growth potential and income levels. Areas of high unemployment but little growth potential are unlikely to develop no matter how many or what types of incentive are offered. In these cases, policy should be directed to the movement of population to adjacent areas where the prospects for growth appear more promising. Further, areas of low unemployment but subsistence levels of income are as much in need of assistance as areas of high unemployment.

These criticisms reflect in large part the continuing confusion over the basic purpose and objectives of ADA. This confusion is not confined to Nova Scotia; it is equally apparent in Ottawa.

Going back to ADA's beginning for a moment -- the original ADA programme was cautious and limited but it represented, at the same time, a major departure from previous federal policy. It was one of the first concrete attempts by the Federal Government to promote growth in the slow-growth areas of the country. Prior to 1963, federal assistance to these areas, where it existed at all, was designed largely

to maintain the status quo. Thus, the initial ADA programme must be viewed as something of an experiment. It is likely that the programme designers were made aware, explicitly or otherwise, that the adoption of bolder measures for area development must await a clear demonstration of success from a more limited project. Also, it was not clear in 1963, at least in Ottawa, how bold area development measures had to be to produce the desired results. An example of the early caution which prevailed is provided by the 1963 Explanatory Note to the programme which stipulated that eligible firms must begin commercial production in designated areas "within 24 months of December 5, 1963" in order to receive benefits. It was not until 1964 that the program was amended to extend to March 31, 1967.

It is not clear whether the ADA programme in the eyes of the Federal Government was initially welfare-oriented or development-oriented. Introduction of a new and expanded ADA programme in August, 1965 did nothing to clarify this confusion. On the one hand, some of the criticisms made of the old programme were taken into account and appropriate changes were made. Capital grants were substituted for tax incentives and the criteria governing the designation process were broadened. Thus, the new programme promised to be more effective over a wider area. On the other hand, key growth points such as Halifax-Dartmouth were specifically excluded from the new programme preventing the realization of the maximum growth potential in Nova Scotia (assuming, as the Voluntary Planning Board does, that a growth centre development strategy is the most appropriate one for the province). And, the new ADA programme's stated objective -- long-term employment generation in designated areas -- runs directly counter to the objectives of the new (May, 1965) federal manpower mobility programme which is designed to facilitate the movement of unemployed workers out of depressed areas to areas of job opportunity. Does this reflect confusion over the orientation of the ADA programme or lack of programme co-ordination or both? It is interesting to note that the Second Annual Review of the Economic Council of Canada commends the manpower mobility programme and criticises the delay in putting

it into effect (p. 184). With reference to ADA, it stresses "the necessity for close co-ordination in the formulation and implementation of consistent regional development policies and programmes among all levels of government" (pp. 176-177).

Federal authorities have made it quite clear that they have no intention of altering the ADA programme in the near future to permit the inclusion of Halifax-Dartmouth. Yet the revised criteria governing area designation are flexible enough as stated to permit them to do so. The authorities stress, however, that any programme alterations that resulted in Halifax-Dartmouth becoming eligible for ADA benefits would also make competing areas of the country eligible. This point appears valid and leads one to the conclusion that ADA has not been, is not, and will not be an appropriate agency for the stimulation of economic development in Nova Scotia.

This section concludes with a brief statement of the implications of the new ADA programme for IEL and for growth in the secondary manufacturing sector of Nova Scotia.

To some extent, it is possible to argue that the advent of ADA has reduced the competitive position of IEL by reducing its uniqueness. Industrial Estates Limited has probably the most attractive provincial development programme in Canada. Before ADA, it was highly competitive because it was almost in a class by itself. Few provinces would match its provisions. With ADA, and its national scope and greater financial inducements, the competitive edge of IEL has been reduced. On the other hand, the ADA programme supplements that of IEL. It does not conflict. The Area Development Agency offers subsidies. Industrial Estates Limited offers a financing service. Area Development Agency personnel have indicated that the two programmes together top anything available elsewhere in Canada and make a Nova Scotia plant location not only feasible but "downright desirable in many cases".

Two other points of relevance to future growth prospects should be mentioned. First, IEL's operations include Halifax-Dartmouth; ADA's do not.

But the ADA programme offers greater financial benefits from the point of view of a specific firm meaning that companies generally are likely to find it more worthwhile to locate in a designated area than in Halifax or Dartmouth. Second, the ADA benefits are available to all qualified new manufacturing operations whether or not they compete with existing firms in the province. The IEL programme specifically excludes new firms which would be competitive with established companies.

IV. SECONDARY MANUFACTURING IN PROFILE

INTRODUCTION

The preceding chapters outlined sector trends during the post-war period and analysed in detail new additions to the secondary manufacturing base since 1957. This chapter presents a detailed profile of the secondary manufacturing sector in 1961 and 1962, the latest years for which official data are published. A number of comparisons are made between Nova Scotia and Canada as a whole. These provide a valuable perspective on the strengths and weaknesses of various components of the provincial sector. Particular attention is paid to the key question of productivity.

THE SECTOR IN PERSPECTIVE

This section puts the secondary manufacturing sector in perspective relative to total manufacturing and to the provincial economy as a whole, and compares Nova Scotia in a very limited way with the Atlantic Provinces and Canada.

The latest official figures that can be computed for secondary manufacturing in Nova Scotia relate to 1962. Almost 19,000 people were employed in the sector in that year, an increase of 790 or 4.4 per cent over 1961. Three-quarters of the secondary manufacturing labour force (or 14,000) were production workers. The remainder were administrative, office and other non-production personnel. Gross shipments totalled $282 million; value added was $123.7 million.

Secondary manufacturing was much more important to the province than primary manufacturing (see Table 7). It accounted for 63 per cent of total manufacturing employment, 66 per cent of gross manufacturing shipments and 71 per cent of the total value added by manufacturing. Not only was secondary manufacturing larger in absolute terms; per worker productivity in the sector was also higher than in primary manufacturing.

Secondary manufacturing was the most

Table 7. SECONDARY MANUFACTURING IN NOVA SCOTIA
RELATIVE TO TOTAL MANUFACTURING
VARIOUS INDICATORS
1961 and 1962

Year	Establishments	1962/1961 %	Gross Value of Shipments	% Change	Value Added	% Change	Working Owners & Partners	% Change	Employees	% Change	Production Workers	% Change
	No.		$'000		$'000		No.		Total			
(a) Total Manufacturing - Primary and Secondary												
1961	1,030		381,642		161,288		599		27,838		21,247	
1962	1,030	--	426,677	+11.8	174,613	+8.3	618	+3.2	29,427	+5.7	22,594	+6.3
1963	n.a.		440,999	+ 3.4	n.a.		n.a.		n.a.		n.a.	
1964	n.a.		502,760	+14.0	n.a.		n.a.		n.a.		n.a.	
(b) Secondary Manufacturing												
1961	482		251,204		113,899		272		17,824		13,509	
*1962	483	+0.2	282,332	+12.4	123,739	+8.6	265	-2.6	18,621	+4.5	14,182	+5.0
(c) Secondary Manufacturing as a % of Total Manufacturing												
1961	47		66		71		45		64		64	
1962	47		66		71		43		63		63	

* Latest data available

n.a. - not available.

Sources: (a) 1961-62 D.B.S. 31-203(1962)
1963-64 D.B.S. 31-001 (July, 1965)
(b) D.B.S. 31-204 (1962 preliminary)
(c) Based on (a) and (b)

important of all the goods-producing sectors in Nova Scotia. It provided 29 per cent of the total production (value added) by these sectors and 23 per cent of total employment. Construction was the next largest sector in terms of production with one-quarter of the total; primary agriculture was the second largest source of employment at 22 per cent.

Nova Scotia has the largest and most diversified secondary manufacturing base of the four Atlantic Provinces. Relative to Canada, however, this base is very small and relatively narrow. It comprises roughly two per cent of the national total. We have not taken the time to calculate exactly the size of the Canadian secondary manufacturing sector in 1962. A rough indication, however, is given in Table 8 which shows secondary manufacturing-total manufacturing ratios for various measures of manufacturing activity in Nova Scotia and Canada. The secondary industries included as numerators in the Canada ratio calculations are identical to those found in Nova Scotia in 1962. In other words, Canadian secondary industries not represented in Nova Scotia in 1962 are excluded from the top half of the Canada secondary manufacturing-total manufacturing ratios.

Table 8

SECONDARY MANUFACTURING-TOTAL MANUFACTURING RATIOS
VARIOUS MEASURES OF MANUFACTURING ACTIVITY
NOVA SCOTIA AND CANADA, 1962

	Nova Scotia	Canada
	%	%
Gross value of shipments	66	52
Value added	71	55
Employees	63	57

Note: The numerators for Nova Scotia and Canada used in the ratio calculations are identical in terms of industrial composition.

Sources: Based upon D.B.S. 31-203 (1962) and 31-204 (1962 preliminary).

It is clear from Table 8 that Nova Scotia lacked the diversity of secondary industries found in Canada as a whole in 1962. Missing from the Canada numerators for example are such key industries as automobile manufacturing and the manufacture of tobacco and rubber products. This conclusion can be stated in a different way -- namely, that the secondary industries in Nova Scotia were more important relative to total manufacturing than the same industries in Canada.

THE SECTOR IN DETAIL

Tables A-1 and A-2 (Appendix) give some indication of the relative significance of various types of secondary manufacturing in Nova Scotia. In Table A-1 detailed data for 1961 and 1962 by industry group and by industry are presented. In Table A-2 the 1962 data from Table A-1 are converted into percentages. The results are similar to those already discussed above in Chapter II.

Transportation equipment was the largest (identifiable) industry group in 1962 in terms of employment (23 per cent of the total) followed by foods and beverages (17 per cent), metal fabricating (nine per cent) printing, publishing and allied industries (seven per cent), and knitting mills (seven per cent). Also important, although not individually identifiable, were primary metal industries, textiles, electrical products, and petroleum products. These groups, plus the small leather industries group, provided 26 per cent of total sector employment.

In terms of value added, transportation equipment was again the leading (identifiable) industry group with 18 per cent of the total. It was followed closely by foods and beverages (17 per cent). Printing, publishing and allied industries and metal fabricating exchanged places with eight per cent and seven per cent respectively. Knitting mills fell to four per cent. The confidential industries group increased its share to 37 per cent of the total indicating high productivity in at least some of the component industries.

Shipbuilding and repair was by far the most important single (identifiable) industry in terms of employment and value added with 12 per cent and nine per cent of the respective totals for the sector. It was followed by the printing and publishing industry (five per cent and six per cent), bakeries (five per cent and four per cent), and soft drink manufacturers (two per cent and three per cent). Other industries of course were just as important as those identified but they cannot be segregated because of the nature of the data.

These rankings by industry group and by industry should not be over-emphasized. They relate to only one year; important changes can occur over time. Some of the seemingly less important sector components in 1962 have excellent growth potential or are important to the provincial economy because they serve as the mainstay of a local community, produce key inputs for other industries, etc. These cautionary notes aside, however, it is instructive to seek to isolate the major components of the sector in order to focus discussion and forecasting effort and to assist in the preparation of the plan.

The problems involved in ranking are further illustrated by the following examples. Transportation equipment accounted for 23 per cent of total secondary manufacturing employment, but 26 per cent of the sector's production workers, 18 per cent of value added, 14 per cent of the establishments, and 13 per cent of gross value of shipments. Even more impressive is the range for the group of confidential industries - from only four per cent of the sector establishments to 47 per cent of gross value of shipments. Clearly, too great an emphasis on any one measure of activity can be highly misleading.

PRODUCTIVITY LEVELS BY INDUSTRY GROUP AND BY INDUSTRY

Productivity variations between industries and between firms in the same industry are of major importance. Productivity determines the ability of a firm to compete - for markets, for capital and for workers. High levels of productivity enable a firm to set competitive prices, thereby expanding its sales;

to yield a good return on its investment, thereby attracting capital for expansion; and to pay attractive wages and salaries, thereby ensuring an ample supply of labour. Conversely, low productivity firms can only hope to stay in business as long as the productivity of their competitors remains relatively low.

In Tables 9 and 10 the industry groups and industries comprising the secondary manufacturing sector in Nova Scotia are ranked for 1961 and 1962 respectively according to their productivity as measured by annual value added per production worker or value added per production man-year (see column 1 in the tables).

Production man-hour data became available in published form beginning with 1961. Value added per production man-hour and value added per production man-year are equally acceptable as measures of productivity. Indeed, the former is slightly more precise in that its use automatically eliminates the effects of variations in the length of the work day, the work week, or the work year. However, productivity data on a man-year basis can be developed for many years; official man-hour data are available only for 1961 and 1962. Thus, historical comparisons are only possible on a man-year basis. Also, the difference in results from the use of man-hour as opposed to man-year data is in most cases minor (although interesting variations do show up)* and our concern is only with rough orders of magnitude.

Value added is a measure of the relationship between the total net output of an industry and the net inputs required to produce that output. These inputs take several forms -- the quantity and quality of

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* The table on page 55 presents value added per production man-hour data by industry group for Nova Scotia and Canada, 1962 and shows the relationship between value added per production man-hour and value added per production man-year as measures of productivity. This table supplements not only Tables 9 and 10 in this section, but also Table 11 in the following section.

Table 9. SECONDARY MANUFACTURING INDUSTRIES RANKED BY VALUE ADDED PER PRODUCTION WORKER WITH SIX OTHER INDICATORS AND THEIR RANK, NOVA SCOTIA, 1961

INDUSTRY GROUP	1		2		3		4		5		6		7	
	$	Rank	No.	Rank	$	Rank	%	Rank	$	Rank	%	Rank	%	Rank
Chemicals & chemical products	22,240	1	22	9	3,420	6	15	12	1.60	6	9	8	57	5
Printing, publishing & allied industries	11,655	2	17	10	3,639	3	31	10	1.75	4	19	5	75	2
Total confidential data*	11,230	3	237	1	4,601	1	41	6	2.24	1	6	9	38	11
Foods & beverages	9,747	4	23	8	1,599	12	18	11	1.13	10	25	4	44	9
Paper & allied industries	8,534	5	135	3	2,992	7	39	9	1.25	9	40	3	44	9
TOTAL SECONDARY MANUFACTURING	8,431		37		3,547		42		1.69		10		45	
Metal fabricating	8,023	6	31	7	3,634	4	45	5	1.77	2	1	10	46	8
Non-metallic mineral products	7,347	7	12	11	2,773	8	39	7	1.38	7	1	10	40	10
Machinery (except electrical)	7,146	8	76	4	3,550	5	50	3	1.71	5	-	11	81	1
Miscellaneous manufacturing	6,982	9	6	13	2,545	9	37	8	1.27	8	11	6	65	3
Transportation equipment	5,384	10	57	5	3,883	2	72	1	1.76	3	1	10	59	4
Furniture & fixtures	4,558	11	9	12	2,132	10	47	4	1.05	11	10	7	54	6
Knitting mills	4,056	12	174	2	1,897	11	47	4	.9	12	23	1	48	7
Clothing	2,759	13	32	6	1,455	13	53	2	.76	13	72	2	40	10
INDUSTRY**														
Soft drink manufacturers	20,494	1	16	3	2,544	9	12	11	1.10	10	2	8	67	4
Printing & publishing	14,739	2	35	2	4,207	1	29	9	2.00	1	15	4	80	1
Ornamental & architectural	11,051	3	15	4	3,844	5	29	9	1.59	5	5	5	63	5
Bakeries	10,701	4	11	5	2,303	10	22	10	1.01	11	25	2	46	11
TOTAL SECONDARY MANUFACTURING	8,431		37		3,547		42		1.69		10		45	
Stone products	5,935	5	7	8	2,750	6	40	7	1.24	8	3	7	77	2
Machine shops	5,853	6	9	6	3,624	3	53	3	1.64	3	1	9	61	7
Dental Laboratories	5,563	7	3	11	2,156	12	35	8	.98	12	22	3	71	3
Commercial printing	5,156	8	9	6	2,567	8	42	6	1.22	9	27	1	60	8

...

Table 9. (Concluded)

INDUSTRY**	1		2		3		4		5		6		7	
	$	Rank	No.	Rank	$	Rank	%	Rank	$	Rank	%	Rank	%	Rank
Concrete products	5,384	9	8	7	2,674	7	50	4	1.39	6	-	10	45	12
Shipbuilding & repair	5,129	10	114	1	3,849	2	75	1	1.74	2	1	9	60	6
Boatbuilding & repair	5,052	11	3	11	2,221	11	44	5	1.11	9	-	10	62	6
Signs & displays	5,042	12	5	9	3,458	4	69	2	1.60	4	-	10	55	9
Household furniture	4,162	13	4	10	1,810	13	44	5	.89	13	6	6	53	10

• Includes leather goods, textiles, primary metal industries, electrical products and petroleum products.

•• Non-confidential data are available only for a few of the secondary manufacturing industries in Nova Scotia.

Indicator and Rank

1. Value Added per Production Worker
2. Average Number of Employees per Establishment
3. Wage-earnings per Production Worker
4. Wage-earnings as a % of Value Added (3 ÷ 1)
5. Wage-earnings per man-hour
6. Female Production Workers as a % of Total Production Workers
7. Value Added as a % of Gross Value of Shipments

Source: Computed from DBS 31-204 (1962 preliminary)

Table 10. SECONDARY MANUFACTURING INDUSTRIES RANKED BY VALUE ADDED PER PRODUCTION WORKER WITH SIX OTHER INDICATORS AND THEIR RANK, NOVA SCOTIA, 1972

INDUSTRY GROUP	1		2		3		4		5		6		7	
	$	Rank	No.	Rank	$	Rank	%	Rank	$	Rank	%	Rank	%	Rank
Chemicals & chemical products	20,096	1	19	8	5,676	4	18	12	1.71	5	7	8	47	6
Printing, publishing & allied industries	13,001	2	18	9	3,511	6	27	10	1.67	6	18	5	77	1
Total confidential data*	11,813	3	244	1	4,737	1	40	7	2.28	1	7	8	55	10
Foods & beverages	10,107	4	24	7	2,566	10	25	11	1.17	10	41	3	64	8
Non-metallic mineral products	9,903	5	10	10	3,160	7	32	9	1.41	7	-	10	46	7
Paper & allied industries	9,371	6	109	3	5,067	8	33	8	1.27	9	40	4	47	6
TOTAL SECONDARY MANUFACTURING	5,725		48		2,633		42		1.73		17		44	
Miscellaneous manufacturing	7,526	7	9	12	2,934	9	40	7	1.39	8	12	6	63	2
Metal fabricating	7,151	8	34	6	3,589	5	50	4	1.80	3	1	9	44	9
Transportation equipment	6,875	9	63	5	3,905	2	64	2	1.85	2	1	9	60	3
Furniture & fixtures	5,514	10	6	11	2,448	11	44	6	1.14	11	11	7	57	4
Machinery (except electrical)	5,233	11	65	4	3,708	3	71	1	1.72	4	-	10	60	3
Knitting mills	4,560	12	176	2	2,032	12	45	5	.98	12	74	1	48	5
Clothing	3,040	13	34	6	1,709	13	56	3	.87	13	68	2	41	9
INDUSTRY**														
Soft drink manufacturers	20,259	1	17	4	2,562	10	12	13	1.15	10	2	6	64	5
Printing & publishing	15,304	2	36	2	3,810	5	25	11	1.79	2	14	4	80	1
Bakeries	11,611	3	12	5	2,473	11	21	12	1.08	12	25	2	49	10
TOTAL SECONDARY MANUFACTURING	5,725		38		2,633		42		1.73		17		44	
Dental laboratories	8,200	4	2	11	2,600	9	32	9	1.13	11	27	1	72	2
Commercial printing	8,141	5	9	7	2,783	7	34	10	1.36	3	24	3	71	3
Concrete products	7,657	6	5	9	3,075	6	40	7	1.40	7	-	7	46	11
Ornamental & architectural	7,409	7	20	3	2,847	7	38	8	1.44	6	2	6	50	9

...

Table 10. (Concluded)

	1		2		3		4		5		6		7	
	$	Rank	No.	Rank	$	Rank	%	Rank	$	Rank	%	Rank	%	Rank
Machine shops	6,561	9	11	6	3,495	4	53	4	1.92	6	2	4	50	7
Signs & displays	6,600	8	4	10	4,227	1	60	2	1.56	5	-	8	50	9
Stone products	6,057	10	8	8	3,407	5	56	3	1.70	5	-	7	37	8
Boatbuilding & repair	5,791	11	4	10	2,485	12	42	6	1.37	9	-	9	65	6
Shipbuilding & repair	5,529	12	145	1	4,055	2	73	1	1.85	4	..	5	86	4
Household furniture	4,906	13	17	11	2,115	13	43	5	.97	13	6	3	54	5

* Includes leather goods, textiles, primary metal industries, electrical products and petroleum products.

** Non-confidential data are available only for a few of the secondary manufacturing industries in Nova Scotia.

.. Less than 0.5%.

Indicator and Rank

1. Value Added per Production Worker
2. Average Number of Employees per Establishment
3. Wage-earnings per Production Worker
4. Wage-earnings as a % of Value Added (3 ÷ 1)
5. Wage-earnings per man-hour
6. Female Production Workers as a % of Total Production Workers
7. Value Added as a % of Gross Value of Shipments

Source: Compiled from DBS 31-204 (1982 preliminary)

Industry Group	Value Added Per Production Man-Hour	Indices		Value Added Per Production Man-Hour	Indices	
		Value Added			Value Added	
		Per Man-Hour	Per Man-Year		Per Man-Hour	Per Man-Year
	$	Sector Average = 100	[1]	$	Sector Average = 100	[1]
Foods and beverages	4.62	111	116	7.33	175	154
Knitting Mills	2.31	55	62	3.84	92	96
Clothing	1.85	57	58	3.84	91	96
Furniture & fixtures	2.56	61	63	5.71	136	60
Paper & allied industries	5.89	94	107	4.78	80	98
Printing, publishing & allied industries	6.18	148	149	7.19	172	148
Metal fabricating	3.89	93	98	5.71	136	98
Machinery (elec. only)	2.43	58	60	6.24	149	114
Transportation equipment	3.87	93	98	4.78	114	98
Non-metallic mineral products	4.43	106	114	5.76	137	120
Chemicals & chemical products	9.70	232	250	11.96	286	250
Miscellaneous manufacturing	3.01	72	98	3.98	95	81

Notes: (a) Sector average, value added per production man-hour -- $ 4.18
Sector average, value added per production man-year -- $ 5,220.
(b) Sector average, value added per production man-hour -- $ 5.84
Sector average, value added per production man-year -- $ 11,700.

Sources: Computed from D.B.S., 31-202 (1961) and 31-204 (1962 preliminary).

labour, management knowhow, the quantity of capital equipment, the level of technology, the organization of production, etc. No one input produces all the value added. A blend of inputs is necessary. Unfortunately, existing theory and statistical methods do not enable us to quantify the relative contribution of any single input at the industry level. To be able to do so, of course, would be of enormous assistance in economic planning.

Chemicals and chemical products displayed by far the highest productivity of any industry group in Nova Scotia in 1961 and 1962. Clothing showed the lowest. Value added per production man-year for all secondary industries averaged $8,725 in 1962. Taking this average figure as 100, the relevant figures for chemicals and clothing would be 230 and 35 respectively. In other words, productivity in chemicals was more than six times that in clothing. Other industry groups showing significantly greater than average productivity were printing, publishing and allied industries, the confidential group of industries, and foods and beverages. Significantly below average, in addition to clothing, were knitting mills, machinery, furniture and transportation equipment.

At the industry level, and bearing in mind the limited number of industries for which separate data are available, productivity was highest in the manufacture of soft drinks and lowest in household furniture. Again, taking the sector average productivity figure ($8,725) as 100, soft drinks and household furniture would be 232 and 56 respectively.

It is sometimes assumed that industries within the same industry group must be relatively homogeneous in terms of productivity. Under this assumption, industry group data would be sufficient for broad planning purposes. The tables indicate that this assumption holds true, however, only for some industry groups. In others -- e.g., printing, publishing and allied industries, and foods and beverages -- individual industries display wide differences in productivity. This fact illustrates the importance of developing detailed industry data wherever possible in order to increase the utility and efficiency of

economic planning.

Average sector productivity increased by 3.5 per cent between 1961 and 1962 (using current dollars) a very creditable performance (and one in excess of the annual productivity target of 2.4 per cent (using constant dollars) set by the Economic Council of Canada for the country as a whole (all industries) over the period 1963-1970).

Tables 9 and 10 present six indicators, in addition to value added per production worker, of differences between the various components of the secondary manufacturing sector. In total, these indicators help to account for the varying levels of productivity noted above. This was the main purpose of including them in the tables. A full explanation, however, of the productivity variations by industry, and an analysis in detail of the implications of these variations for public and business policies, must await the completion of a great deal more work than has been attempted to date. More will be said on this matter in Chapter VI.

Column 2 of the tables shows the average number of employees per manufacturing establishment. Average sector employment per establishment in 1962 was 38, an increase of one over 1961. Establishments ranged in (average) size in 1962 from two employees in the cases of household furniture and dental laboratories to 244 employees in the confidential group of industries. Some individual establishments, of course, had many more than 244 employees. The tables, however, show only averages. No casual relationship is apparent between average size of establishment and productivity when comparing different industries. Some of the industries with the largest establishments had the lowest productivity and vice versa.

Annual wage-earnings per production worker figures are shown in column 3 of the tables. The sector average in 1962 was $3,633, an increase of 2.4 per cent from 1961. The confidential group of industries produced the highest average earnings for its workers in 1962 -- $4,737 -- compared to a low of $1,705 in clothing. No consistently close relationship

is evident between earnings and productivity. The shipbuilding and repair industry, for example, ranked 12th (out of 13 identifiable industries) in productivity, but second in wage-earnings.

Column 4 shows wage-earnings as a percentage of value added. Value added represents the amount an industry has available to pay wages, salaries, depreciation, interest, rent and so on in addition to profit. The way in which this "pie" is divided varies from industry to industry, and within the same industry over time, depending upon the changing relative strengths of the many competing interests. Other things being equal, in a labour-intensive industry the share of the pie being paid out in the form of wages will be large. In a capital-intensive industry, the wage-earnings share will be smaller. Other factors affecting the share going to wage-earners include the extent to which the work force is unionized, the strength of the unions, the location of the industry - urban or rural, the proportion of females in the total work force, etc. It would be difficult to isolate the effect of any one factor. Thus, the figures in column 4 are a result of many conflicting forces. On average 42 per cent of the value added in the secondary manufacturing sector in 1961 and 1962 was paid out in the form of wages. The extent of the variation between industries is startling. It ranged in 1962 from 77 per cent in shipbuilding and repair to 12 per cent in the highly capital-intensive soft drink manufacturing industry.

Wage-earnings per man-hour data are presented in column 5. The sector average in 1962 was $1.73. As might be expected, there is a close relationship between wage-earnings per man-hour and annual wage-earnings per production worker (column 3). Wage-earnings per man-hour ranged from a high of $2.28 to a low of $0.87.

Data on female production workers as a percentage of total production workers are given in column 6. Seventeen per cent of the production workers in the sector in 1961 and 1962 were females. They predominated only in two industry groups -- knitting mills and clothing. Wage-earnings,

interestingly were lowest in these same two groups. The non-metallic mineral products and machinery industry groups employed no women production workers in 1962. At the industry level, female workers were absent in concrete and stone products, signs and displays, and boatbuilding and repair. Generally, average wage-earnings tended to be highest where the proportion of females was lowest.

Value added as a percentage of gross value of shipments is shown in column 7. The difference between value added and gross value of shipments consists of purchased inputs from other industries in the form of materials and supplies and fuel and electricity. Thus, the value added-gross value of shipments ratio reflects the degree of processing or manufacturing in an industry. A high ratio indicates a low proportion of inputs purchased from elsewhere. A low ratio indicates the opposite. Clearly, other things being equal, a province benefits most in terms of employment and income when value added in its manufacturing industries forms a high percentage of gross value of shipments. This point can be expressed in another way. Year-to-year increases in gross value of shipments can actually leave a province less well off if value added is decreasing. Value added as a percentage of gross value of shipments varies from industry to industry, within the same industry, from location to location, and over time. The average percentage for all secondary industries reflects the prevailing industry "mix". In Nova Scotia, in 1962, value added as a percentage of gross value of shipments was highest in the printing, publishing and allied industry group at 77 per cent and lowest in the confidential group of industries (35 per cent), clothing (41 per cent), and foods and beverages (44 per cent). The sector average was 44 per cent. There is no apparent relationship between the percentages in column 7 and productivity (column 1).

PRODUCTIVITY COMPARISONS - NOVA SCOTIA AND CANADA

This section examines productivity variations between Nova Scotia and Canada. The analysis is designed to help set the stage for the forecasts developed in the following chapter.

There are at least three ways of obtaining an indication of probable future productivity levels in Nova Scotian secondary industries. The best involves detailed analyses of the growth potentials of individual industries. Unfortunately, we have not had time to pursue this course. A second and quicker but much less accurate approach involves the projection of historical productivity trends. Productivity trend projections are only possible, of course, on the basis of comparable employment and constant dollar value added series. The great difficulties involved in constructing comparable employment series back over time were noted in Chapter II. Also noted was the lack of readily available price deflators at the provincial level. Faced with these obstacles, a third approach was attempted -- the relationship between productivity in Nova Scotia and Canada.

In Table 11 Canada data are set out for 1962 similar to the Nova Scotia data in Tables 9 and 10. It will be noted by comparing Tables 10 and 11 (column 1) that average productivity in the secondary manufacturing sector as a whole in Nova Scotia in 1962 was only 74 per cent of the corresponding national average.

Not only was average sector productivity in Nova Scotia below the national average in 1962; in Table 12 Nova Scotian productivity levels are shown to be below average in every identifiable industry group.

In one case in Table 12 -- miscellaneous industries -- the productivity differential between Nova Scotia and Canada was relatively small. In others, e.g., machinery and clothing, the differentials were large to the point that one is left wondering how the Nova Scotian industries concerned can possibly survive. There is no apparent relationship between the productivity rank of an industry group in Nova Scotia (Table 10) and the size of the relevant productivity gap with Canada (Table 12). The chemicals group, for example, was the most productive in Nova Scotia by far but in relation to Canada it ranked seventh.

At the industry level, the provincial picture was only slightly less disturbing. In Tables

Table 11. SEVEN COMPARATIVE INDICATORS
SELECTED SECONDARY MANUFACTURING INDUSTRIES, CANADA, 1962**

INDUSTRY GROUP & INDUSTRY	1 $	2 No.	3 $	4 $	5 $	6 $	7 $
TOTAL SECONDARY MANUFACTURING	11,738	35	3,334	33	1.83	25	46
Foods & Beverages [1]	16,411	59	3,330	24	1.43	62	59
*Slaughtering & meat packing	10,443	104	4,431	42	2.08	19	17
*Animal oils & fats	14,436	23	3,707	26	1.57	1	50
*Sausages & sausage casings	10,320	21	3,242	31	1.51	33	34
*Biscuits	8,564	150	2,907	33	1.42	60	51
Bakeries	11,490	12	3,294	29	1.46	23	51
*Confectionery	8,509	55	2,365	33	1.38	57	48
Soft drink manufacturers	22,803	26	3,225	14	1.47	6	56
*Miscellaneous foods	22,024	44	3,515	16	1.65	40	38
*Distilleries	40,676	241	4,630	11	2.22	29	67
*Breweries	57,230	180	5,204	14	2.44	..	72
*Wineries	24,941	42	3,295	14	1.85	10	57
Leather industries	5,045	55	2,575	51	1.65	51	51
*Shoes	4,807	42	2,599	52	1.67	51	51
*Boot & shoe findings	5,788	36	4,067	46	1.80	35	43
*Miscellaneous leather products	5,414	27	3,435	47	1.62	58	51
Textiles	6,128	79	3,041	36	1.48	34	49
*Cotton yarn & cloth	7,021	456	3,045	44	1.48	31	40
*Synthetic textiles	10,775	271	3,363	31	1.65	21	50
*Canvas products	6,492	13	3,455	38	1.18	54	45
*Embroidery, pleating, etc.	5,615	14	3,509	45	1.20	60	74
*Miscellaneous textiles	5,794	25	3,223	30	1.62	66	44
Knitting mills	6,293	65	3,474	42	1.37	54	44
Clothing	5,676	39	3,054	40	1.28	71	45
*Men's clothing factories	6,002	24	3,235	51	1.27	70	44
*Women's " "	6,156	43	3,639	44	1.34	78	46
*Fur goods	6,851	8	3,551	43	1.48	35	30
*Hats & caps	5,621	31	3,736	49	1.35	61	56
*Miscellaneous clothing	6,108	21	3,321	34	1.15	75	52
Furniture & fixtures	7,230	15	3,264	47	1.47	10	51
*Household furniture	6,791	12	3,205	47	1.46	9	51
*Other Furniture	7,844	24	3,361	44	1.53	12	50
Paper & allied industries	10,254	60	2,708	26	1.68	24	41
*Folding & set-up boxes	8,314	24	3,405	43	1.61	34	43
*Corrugated boxes	10,501	140	4,173	39	1.91	14	35
*Other paper converters	11,812	45	3,712	31	1.73	22	45
Printing, publishing, & allied industries	14,421	22	4,442	31	2.83	20	53
Commercial printing	10,120	20	4,132	41	2.63	26	61
*Engraving, stereotyping, etc.	11,144	43	5,600	50	3.41	10	51
*Publishing only	10,857	12	4,227	39	2.47	58	62
Printing & publishing	15,813	43	5,597	35	3.44	12	74
Primary metal industries	12,825	239	3,739	29	2.43	1	53
*Iron & steel mills	14,500	539	5,500	37	3.51	1	52
*Iron foundries	8,736	74	4,154	47	1.97	2	59
Metal fabricating	10,740	26	4,242	40	2.63	2	61
*Boiler & plate works	11,655	58	4,421	40	2.19	..	51
*Fabricated structural metals	11,595	175	4,900	42	2.57	..	47
Ornamental & architectural metals	9,716	21	3,921	39	1.83	4	50
*Metal stamping, pressing & coating	10,993	41	4,379	40	2.05	11	44
*Wire & wire products	10,598	52	4,524	42	2.10	10	43
*Hardware, tools & cutlery	10,891	41	3,991	37	1.81	17	64
*Heating equipment	12,666	52	4,015	33	1.93	2	52
Machine shops	8,362	11	4,055	48	1.88	1	62
*Miscellaneous metal fabricating	11,347	48	4,121	36	1.99	9	55

Table 11 (Concluded)

INDUSTRY GROUP & INDUSTRY	1 $	2 No.	3 $	4 %	5 $	6 %	7 %
Machinery (miscellaneous only)	13,405	75	4,430	48	2.06	4	56
Transportation equipment	11,170	105	4,524	49	2.12	1	51
*Aircraft & parts	10,556	332	4,636	44	2.16	2	50
*Truck bodies & trailers	9,622	31	3,991	43	1.87	1	42
*Railroad rolling stock	11,150	309	4,558	41	2.17	1	40
Shipbuilding & repair	7,245	284	4,659	64	2.14	..	61
Boatbuilding & repair	7,022	6	3,204	46	1.48	1	56
*Electrical products	12,113	146	5,081	43	1.91	41	54
*Communications equipment	11,591	203	5,057	55	1.76	51	66
*Batteries	14,295	52	5,982	30	1.46	29	45
*Electric wire & cable	12,776	255	4,714	54	2.14	2	56
Non-metallic mineral products	12,000	15	4,200	54	1.93	..	58
*Gypsum products	17,342	11	4,462	53	1.99	..	58
Concrete products	10,444	15	3,817	57	1.71	1	57
*Ready-mix concrete	13,012	25	4,227	58	2.04	..	60
Stone products	9,450	9	3,564	58	1.76	1	61
*Mineral wool products	17,529	11	4,951	50	2.14	..	60
*Petroleum (refining only)	15,116	24	5,264	45	2.74	1	61
Chemicals & chemical products	20,000	68	4,111	51	2.24	14	57
*Mixed fertilizers	16,992	22	4,113	54	1.55	..	20
*Pharmaceuticals & medicines	29,446	60	5,416	12	1.87	49	70
*Paints & varnish	24,439	53	4,814	15	1.96	3	50
*Soap & cleaning compounds	35,005	44	4,347	13	2.33	19	52
*Industrial chemicals	26,815	131	5,416	20	2.49	1	54
*Other chemicals n.e.s.	24,440	28	3,877	18	1.30	13	46
Miscellaneous manufacturing	8,000	14	3,141	57	1.44	26	57
*Ophthalmic goods	8,748	52	4,952	43	1.43	2	56
Dental laboratories	9,154	25	3,444	56	1.50	20	76
*Venetian blinds	4,302	5	2,422	27	1.13	34	47
*Plastic fabricators n.e.s.	9,284	49	3,118	54	1.46	36	46
*Toys & games	5,900	45	2,297	39	1.09	40	43
Signs & displays	5,718	11	3,569	44	1.83	11	62
*Stamps & stencils (rubber & metal)	6,473	11	3,705	44	1.75	15	71
*Artificial ice	7,648	8	3,000	59	1.31	1	74

* Denotes industries in Nova Scotia in 1962 not separately identifiable because of the confidential nature of the relevant data.

** This table includes the corresponding Canada figures for only those secondary manufacturing industries found in Nova Scotia in 1962.

.. Less than 0.5 per cent.

Technical Notes

(1) The industry group total in all cases includes only those industries listed.
(2) There are no production workers in this industry. Value added per employee has been substituted.
(3) Salaries and wages divided by total employees. See previous note.
(4) Not applicable. Man-hour data are available only for production workers. There are no production workers in this industry.
(5) Female administrative, office and other non-manufacturing employees as a per cent of total employees. See note (2).

Indicator and Rank

1. Value Added per Production Worker
2. Average Number of Employees per Establishment
3. Wage-earnings per Production Worker
4. Wage-earnings as a % of Value Added (3 ÷ 1)
5. Wage-earnings per Man-hour
6. Female Production Workers as a % of Total Production Workers
7. Value Added as a % of Gross Value of Shipments

Source: Computed from DBS 31-203 (1962)

Table 12.

AVERAGE PRODUCTIVITY BY INDUSTRY GROUP
NOVA SCOTIA AND CANADA, 1962

Industry Group	Nova Scotia (Canada = 100)
Miscellaneous industries	90
Knitting mills	87
Printing, publishing & allied industries	86
Non-metallic mineral products	82
Paper & allied industries	81
Furniture & fixtures	80
Chemicals & chemical products	73
Metal fabricating	70
Transportation equipment	67
Foods & beverages	63
Clothing	55
Machinery	39
Total secondary manufacturing	74

Source: Computed from table in footnote on page 55.

13 and 14 data are presented that show that every identifiable industry in Nova Scotia was less productive than its Canadian counterpart. However, the magnitude of the differentials was less pronounced than at the industry group level. Again, no correlation appears to exist between the productivity rank of an industry in Nova Scotia and the relevant productivity relationship with Canada.

These facts give rise to the by now obvious conclusion that the level of productivity in Nova Scotia must increase if the province's industrial structure is to remain competitive. The extent of the productivity time-lag between Nova Scotia and Canada has not been investigated in detail, i.e., how long it might take average productivity in Nova Scotia to rise to the level prevailing in Canada in 1962. It is suspected, however, on the basis of preliminary indications that it is at least 10 years. This means of course that the competitive position of the province can only be improved by decreasing this time-lag. In other words, average productivity in Nova Scotia will

Table 13.

VALUE ADDED PER PRODUCTIVITY BY INDUSTRY
NOVA SCOTIA AND CANADA, 1962

Industry	Nova Scotia (Canada = 100)
Bakeries	98
Dental laboratories	90
Boatbuilding & repair	89
Soft drink manufacturers	87
Machine shops	83
Ornamental & architectural metals	81
Commercial printing	80
Printing & publishing	78
Concrete products	75
Household furniture	74
Shipbuilding & repair	71
Stone products	66
Signs & displays	65
Total secondary manufacturing	74

Source: Computed from following table which in turn has been computed from DBS 31-203 (1962) and 31-204 (1962 preliminary).

Table 14.

VALUE ADDED PER PRODUCTION MAN-HOUR, BY INDUSTRY
NOVA SCOTIA AND CANADA, 1962

Industry	Nova Scotia	Canada
Soft drink manufacturers	$ 9.05	$10.36
Printing and publishing	7.17	9.21
Bakeries	5.06	5.15
Commercial printing	3.98	4.96
Ornamental & architectural metals	3.75	4.64
Dental laboratories	3.57	3.98
Concrete products	3.49	4.67
Machine shops	3.23	3.89
Boatbuilding & repair	3.08	3.46
Stone products	3.02	4.60
Signs & displays	2.70	4.13
Shipbuilding & repair	2.38	3.34
Household furniture	2.28	3.09

not attain the 1962 Canada level if the existing time-lag is maintained until the end of the Second Plan period or 1972. An improvement in Nova Scotia's competitive position could mean that the 1962 Canada productivity level will be reached provincially by 1968. A target is not indicated nor is a forecast presented here; rather the various growth paths confronting the sector are simply noted.

Three points need mentioning in this discussion of comparative productivity levels.

First, the Canada data in Table 12 (showing average productivity by industry group) were adjusted so that the industrial composition of the provincial and national industry groups being compared was the same. Professor Roy E. George of Dalhousie University noted in a recent paper that comparisons between Nova Scotia and Ontario by unadjusted industry group "would be almost meaningless" because the Ontario industry group would contain some industries that did not exist in Nova Scotia.[1] This problem was avoided to the extent possible.

Second, strict comparability does not exist even at the industry level. Many of the S.I.C. industry classifications are broad enough to include firms making completely different end-products (although all the end-products of any given industry of course belong to the same "family" by definition). Strict comparability suffers to the extent that product mixes within the same industry differ. Thus, the actual numbers in Tables 12, 13 and 14 depicting the Nova Scotia-Canada productivity differentials should be used only with considerable caution. The rough relationships they portray, however, are felt to be valid.

Third, it is not easy to determine precisely the reasons for the productivity differentials between

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[1] R.E. George, Costs of Manufacturing in Alternative Locations: Nova Scotia Compared with Ontario and Quebec (Halifax: Dalhousie University, June, 1964) p. iii.

Nova Scotia and Canada or to quantify the relative significance of these reasons. To quote Professor George with reference to official DBS statistics: "... differences between two provinces in 'value added per man' might be due to differences in the skill and energy of the labour force, the type and condition of the capital in use, the systems of labour payment, training policies, qualities of management, the history of labour-management relations and so on. There would be no way of knowing which of these factors was relevant."[1] In an attempt to overcome this problem, Professor George obtained pertinent information directly from a sample of 18 firms with producing plants in both Nova Scotia and Ontario or Quebec. The Nova Scotian plants together accounted for some 20 per cent of the gross value of provincial manufacturing shipments (in 1960). Executives in the 18 companies felt that, on the whole, labour was equally efficient in Nova Scotia and Ontario or Quebec given similar machinery, types of operation, management competency, etc. Professor George concluded (but did not support his conclusions with any substantiating evidence) that the observable productivity differences must be due mainly to a combination of greater plant size in Ontario and Quebec, leading to economies of scale, and greater mechanization. Apparently, no direct comments were elicited from his executive respondents on relative managerial competency. Several stated, however, "that Canadian workmen everywhere were basically much the same and any differences that appeared in practice were always the result of differences in managerial competence -- a sort of 'no bad privates, only bad officers' outlook."[2]

Before examining Professor George's conclusions in more detail, it is interesting to note briefly some views on productivity differentials which have emerged from other studies.

The Gordon Commission special study

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[1] Ibid., p. iii.

[2] Ibid., p. 13.

mentioned earlier in Chapter I, for example, indicated that the productivity differential between secondary manufacturing in Canada and the United States in the mid-1950's was 35 to 40 per cent.[1] At least three-quarters of this differential was attributed to "the smaller scale and less specialized nature of manufacturing operations" in Canada; the remainder was felt to be due "probably" to differences in labour effort and management ability. In some ways, Nova Scotia is to Canada as Canada is to the United States. Similarly, the conclusions of the Fullerton-Hampson study probably go some way towards explaining the 26 per cent Nova Scotia-Canada productivity differential.

Professor A.L. Levine of the University of New Brunswick noted in a recent study[2] that productivity levels in a selected group of New Brunswick manufacturing industries were generally below the relevant national averages. He concluded "as a minimum hypothesis" that these productivity differentials were probably due more to "New Brunswick-Canadian differences in the quality of entrepreneurship and management" than to differences in plant size.

The Second Annual Review of the Economic Council of Canada (ECOC) attaches a great deal of importance to the role of education in explaining productivity variations. It notes with reference to Canada-U.S. productivity differentials that "the educational attainment of the owner and management

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[1] See D.H. Fullerton & H.A. Hampson, Canadian Secondary Manufacturing Industry (Hull: Royal Commission on Canada's Economic Prospects, May 1957) especially Chapter 7.

[2] A.L. Levine, "Toward an Analysis of the Effectiveness of Economic Effort in a Group of New Brunswick Manufacturing Industries", paper presented to the 1964 Conference on Statistics of the Canadian Political Science Association, Charlottetown, 13-14 June, 1964.

group is very significantly lower in Canada than in the United States" (p. 62). Table 5-10 in the Review indicates the highest level of formal schooling attained by the labour force in Canada by province as reported in the 1961 Census. The following figures are excerpts from this table:

Level of Schooling	Nova Scotia (cumulative percentages)	Canada
University degree	3.7	4.3
Some university	8.0	8.8
4-5 years secondary & up	19.2	27.1
1-3 " " " "	63.0	59.5
5-8 " elementary " "	94.7	93.8

The table shows that Nova Scotian workers were less well-educated on the average in 1961 than the Canadian labour force as a whole. This could be an important explanation of the observed productivity differentials in the secondary manufacturing sector; it also lends support to the conclusions of Professor Levine.

Albert O. Hirschman, an American, has advanced an hypothesis that appears to have some relevance here. He has suggested that productivity differentials between semi-industrialized and industrialized countries should be much larger in labour-intensive than in capital-intensive industries even when essentially similar production techniques are used in both counties. Therefore, highly capital-intensive "large-scale ventures, activities that must be maintained in top working order, that must maintain high quality standards for their output, machine-paced operations, and process-centered industries" should be particularly well suited for semi-industrialized countries.[1] Plant and equipment in capital-intensive

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[1] See Benjamin Higgins, Economic Development (New York, 1959) pp. 673 to 675 and Carlos F. Diaz Alejandro, "Industrialization and Labour Productivity Differentials", Journal of Economic Abstracts, (July, 1965) pp. 411 to 412.

industries tend to be expensive and complex resulting in careful pre-production planning, and in prudent operation and maintenance once production gets underway. Workers will be carefully trained because small errors on their part could result in costly shutdowns. Even more important, management will be efficient because only competent managers can run a capital-intensive industry. Thus, the overall result in a country with generally low productivity will be productivity levels in its capital-intensive industries approaching the highest existing anywhere. In contrast, the need for efficient workers and management in labour-intensive industries is not so pressing. There is less costly machinery to break down and traditional management skills are more easily applied to labour-intensive industries. These undesirable (from a productivity point of view) characteristics of labour-intensive industries are much more apt to prevail in countries with low average productivity. Capital-intensive industries will generally display higher levels of productivity than labour-intensive ones regardless of geographic location. Clearly, then, productivity differentials between capital - and labour-intensive industries will be greater in semi-industrialized than in industrialized countries. This conclusion is simply an alternative way of stating the Hirschman hypothesis.

A modified, weaker version of the Hirschman hypothesis (that highly capital-intensive industries are particularly well suited for underdeveloped countries) was tested empirically in a recent study[1] using manufacturing data for Argentina and the United States. The test provided positive support for the following hypothesis: other things being equal, "the greater the labour intensity of an industry in Argentina, the greater will be its productivity differential with the corresponding United States industry". It was noted by the author, however, that the hypothesis appeared to be less valid in the case of those industries where Argentina had a long run comparative advantage.

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[1] Alejandro, op. cit.

What is the relevance of these hypotheses for Nova Scotia? [illegible] Nova Scotia could be termed semi-industrialized in relation to Canada. These hypotheses help to explain the reasons for the productivity differential between the two. More important, however, they lend strong support to the shift in the policy of Industrial Estates Limited made in 1963 when it was decided to concentrate more upon the attraction of capital-intensive industry as one of the best ways of accelerating provincial economic growth (see the discussion on this point in Chapter III).

A somewhat different but relevant hypothesis concerning productivity differentials was advanced in an empirical study, published in 1960, on regional economic growth in the United States.[1] The hypothesis was as follows:

1. interstate differences in labour income from manufacturing were associated with differences in the marginal productivity of labour;

2. these productivity differences in turn reflected varying degrees of labour-intensity in the manufacturing operations in different states;

3. thus, where labour-intensity was high, the marginal productivity of labour, and hence labour income, was low, and vice versa; and

4. this meant that states in which average wage-earnings from manufacturing were below the national average (i.e., the Nova Scotian situation) should display two characteristics:

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[1] Harvey S. Perloff, Edgar S. Dunn, Eric E. Lampard, and Richard F. Muth, Regions, Resources and Economic Growth (Baltimore: John Hopkins Press, 1960) Chapter 32.

(a) a concentration of manufacturing employment in labour-intensive industries; and

(b) a greater proportion of labour relative to other factors of production, and thus lower labour productivity, in each industry.

Despite severe data problems and some correspondingly broad assumptions, the authors concluded that their analysis lent substantial support to the hypothesis.

These various views on productivity differentials and the reasons behind them are sufficient to illustrate the theories currently in vogue. No attempt has been made to test their relevance to the Nova Scotian situation in detail because of time limitations and the extremely difficult nature of the data problems involved. In some cases, the necessary information is simply not available. In others, useful figures could probably be developed but to do so would be very time-consuming. More will be said about the need for further investigation in this area in Chapter VI.

This section terminates with a brief examination of the conclusions of Professor George concerning the reasons for the productivity gap between Nova Scotia and Ontario-Quebec. Professor George's views are singled out here because his is the only recent analytical study on manufacturing in Nova Scotia.[1] He suggested that plant size and degree of capital-intensity were the major determinants of relative productivity levels in Nova Scotia and Ontario-Quebec. Looking first at the question of plant size, Table 15 indicates the relationship between average productivity and plant size by industry group for Nova Scotia

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[1] John Graham makes some interesting comments on manufacturing in his recent study, Fiscal Adjustment and Economic Development: A Case Study of Nova Scotia, but his main concern is not with manufacturing as such. See p. 33 above for full bibliographical reference.

and Canada. The substitution of Canada for Ontario-Quebec should not make any difference to the results assuming that Professor George's conclusion is valid.

Table 15.
AVERAGE PRODUCTIVITY AND PLANT SIZE DIFFERENTIALS BY INDUSTRY GROUP, NOVA SCOTIA AND CANADA, 1962

Industry Group	Average Productivity[1] Nova Scotia (Canada = 100)	Average Plant Size[2] Nova Scotia (Canada = 100)
Miscellaneous Manufacturing	90	36
Knitting mills	87	271
Printing, publishing & allied industries	86	82
Non-metallic mineral products	82	56
Paper & allied industries	81	152
Furniture & fixtures	80	53
Chemicals & chemical products	73	37
Metal fabricating	70	94
Transportation equipment	67	60
Foods & beverages	63	83
Clothing	55	87
Machinery (except electrical)	39	86
Total secondary manufacturing	74	100

Notes: (1) measured by value per production man-hour.
(2) measured by number of employees per establishment.

Sources: Based on Tables 10, 11 and 12.

The results appear to lend no support to the view that plant size differentials are a major determinant of productivity differentials. Professor Levine came to the same conclusion in his study of New

Brunswick-Canada differentials.[1] (Professor Levine used correlation analysis in arriving at his conclusion; it was not necessary to utilize such a rigorous statistical tool for the Nova Scotia data -- the table speaks for itself.)

Such skimpy data as exist appear to support Professor George's second conclusion, however -- namely, that differences in the degree of capital-intensity are major causes of productivity differences. Table 5-11 in the Second Annual Review of ECOC presents indexes of average annual investment per capita, by province, for the period, 1961-1964. Investment in secondary manufacturing is not isolated but included with total private business investment. This group comprises trade, finance, commercial services, utilities, primary industry, construction and publicly owned commercial enterprises in addition to total manufacturing. Nevertheless, the results are indicative. Nova Scotia ranked 9th in the ten-province scale. Only Prince Edward Island was worse off in terms of new private business investment per capita. Expressing Canada as 100, Nova Scotia was 51; P.E.I. was 49. Ontario on the other hand, was 104; Alberta was highest at 161.

Preliminary estimates for 1964 of provincial capital stocks per capita of machinery and equipment (only) in manufacturing are presented in Table 5-12 of the ECOC Review. They are expressed in index form with Canada = 100. Nova Scotia ranked 7th at 43.

Nova Scotia clearly appears to be under-capitalized relative to Canada as a whole according to these two tables which are admittedly rough and preliminary but still better than nothing. This under-capitalization appears to be particularly severe in the case of manufacturing. (One assumes that there is little difference in this regard between primary and secondary manufacturing.) There also appears to be a direct casual relationship between capitalization and productivity levels although the exact nature of the

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[1] Levine, op. cit., p. 67.

relationship remains unclear. It can be concluded, however, that sharply higher levels of capital investment in Nova Scotia's secondary manufacturing sector are necessary if productivity is to be raised relative to the national average.

This discussion points up a major data gap in productivity analysis. Comprehensive estimates of the amount of capital employed in manufacturing by industry, including plant and machinery and equipment, and the average age and degree of utilization of this capital, simply do not exist at the provincial level.[1] Even at the national level, capital stock estimates were first made available only in 1957.[2] These original estimates were revised and extended by DBS to 1960,[3] updated by the federal Royal Commission on Taxation to 1963, and analyzed in detail in a

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[1] In a recent article -- "Trends in the Location of Industry in Ontario, 1945-1959", Canadian Journal of Economics and Political Science, (August, 1965) -- Keith A.J. Hay notes that "Data on capital employed in Canadian manufacturing industry have not been collected since 1943, presumably because of difficulties in maintaining accuracy in this type of data." It is believed that Quebec has underway a detailed investigation into capital stocks in that province.

[2] See Wm. C. Hood and Anthony Scott, Output, Labour and Capital in the Canadian Economy, Royal Commission on Canada's Economic Prospects, (Hull, 1957).

[3] See "The Measurement of the Stock of Fixed Capital by Industry in Canada: A Progress Report", Canadian Statistical Review (July, 1964). A comprehensive monograph is being prepared by D.B.S. outlining concepts, sources and methods in detail.

background paper[1] prepared for the First ECOC Annual Review. Despite all this activity, the results to date remain experimental and tentative. It will probably be necessary for economic planners in Nova Scotia to undertake some original work on capital stock measurements and on the relationship between capital investment and productivity if maximum results are to be forthcoming from the provincial planning effort.

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[1] See Derek A. White, Business Investment to 1970, Staff Study No. 5. Economic Council of Canada (Ottawa, December, 1964).

V. SECTOR PROJECTIONS, 1965-1968

INTRODUCTION

The employment target for the secondary manufacturing sector has been set at 1,200 new jobs a year during the First Plan period, 1965-1968. The purpose of this chapter is to indicate in a relatively general way how this target might be realized.

Ideally, of course, the examination should have utilized the several techniques of regional analysis which have been developed to answer questions of the type which confront provincial planners -- namely, what industries might be expected to exist in Nova Scotia and in what quantities. These techniques range from the relatively simple such as labour and localization coefficients through the more complex such as comparitive cost analysis to the highly complicated such as industrial complex analysis. Because of time limitations none of these have been used. In Chapter VI, however, it is recommended that they begin to be used by Nova Scotian research personnel at the earliest possible opportunity.

Despite the limited time available, it has been possible to develop three approaches to the question of target realization. First, the general realism of the target is tested by projecting recent trends in employment, value added and productivity for the sector as a whole. Next, the growth potential of the sector is assessed in broad terms focussing on the more general issues affecting all or a number of industries. Finally, a detailed assessment is made of the growth potential of specific industry groups and industries to indicate the apparent growth industries and some idea of the role that each industry will play in meeting the sector target.

EMPLOYMENT, VALUE ADDED AND PRODUCTIVITY PROJECTIONS AT THE SECTOR LEVEL

In Table 16 projections are presented of sector employment and value added during the First Plan period, 1965 to 1968, and an indication of the levels that might be expected in 1972, the end of the

Second Plan period. The 1972 figures have been included, in line with overall provincial planning practice, to provide some perspective on the First Plan period. However, they are much more tentative than the 1965 to 1968 figures and should be treated accordingly.

Table 16.

PROJECTIONS OF EMPLOYMENT AND VALUE ADDED SECONDARY MANUFACTURING SECTOR, NOVA SCOTIA, 1965 TO 1968 AND 1972

Year	Employment[1]		Value Added[2]	
	No.	Index (1947=100)	$'000 (current)	Index (1947=100)
1965	21,850	111	166,470	295
1966	22,940	116	180,960	321
1967	24,080	122	196,700	348
1968	25,270	128	213,810	379
1972	30,680	155	298,500	529

Notes: 1. Includes working owners and partners.
2. Total activity concept includes value added through manufacturing plus value added through any other activity, e.g., construction, undertaken by the manufacturing establishments.

Sources: Based upon DBS 11-001, 31-001 (July, 1965), 31-203 (1962), 31-204 (1962 preliminary), 72-008 (1965) and 72-503.

The projections are based upon growth trends during 1963, 1964 and a large part of 1965 and assume a continuation of the high level of economic activity which prevailed during that period. The projection base excludes 1961 and 1962 to eliminate the distorting influence of the 1961 recession. Growth in employment is projected at five per cent per year or 1,057 new jobs in 1965 and 1,190 in 1968. Value added is expected to increase at the rate of 8.7 per cent per year in current dollar terms. The employment projections are high from an historical point of view.

It will be recalled that employment increased only five per cent during the entire 1947 to 1964 period. However, there is no apparent reason why the actual growth pattern since 1962 cannot be maintained during the remainder of the First Plan period given national prosperity and a medium to high level of international demand. The employment projections are somewhat below the maximum target set by the Voluntary Planning Board but this should not be a cause for great concern. Assuming that the sector plan is accepted and implemented at an early date, it is not unreasonable to suggest that the actual growth rate during the 1965 to 1968 period might well exceed the rate projected here.

Implicit in the projections of employment and value added is a productivity growth rate of some 3.7 per cent a year. This figure appears quite realistic in the light of the historical productivity trends outlined in Chapter II. It appears not only realistic, but essential, when compared with the rate set for the country as a whole by the Economic Council of Canada.

ECOC, as mentioned in Chapter IV, has called for a national productivity increase of 2.4 per cent a year per person employed (all industries) and 3.0 per cent a year per man-hour over the period, 1962 to 1970 (assuming constant dollars). (A forecast of annual hours worked for Nova Scotia has not been attempted although this refinement is desirable and should be undertaken as soon as possible.) ECOC has not developed a productivity target for secondary manufacturing as such. However, it has called for a productivity increase of 2.8 per cent a year per person employed in the commercial non-agricultural sector of the economy. This sector includes secondary manufacturing. It also includes trade; personal, business and recreation services; and other industries whose annual productivity growth might be expected, on the basis of past experience, to be below 2.8 per cent. It could well be, therefore, that ECOC has assumed (implicitly) an increase in productivity in secondary manufacturing of more than the average for the commercial non-agricultural sector as a whole -- i.e., of more than 2.8 per cent a year.

It is, of course, imperative that productivity levels in Nova Scotia increase faster than in Canada as a whole if the provincial-national productivity gap is to be closed. The provincial target rate of 3.7 per cent a year for secondary manufacturing (current dollars) would appear to be slightly, but not a great deal, higher than the corresponding national target rate of 2.8 per cent plus a year (constant dollars). Thus, Nova Scotia's secondary manufacturing sector will have to grow at the target rate just to ensure that it does not lose ground. It may have to grow at a rate in excess of the target rate to achieve a relative gain.

Finally, it is interesting to note very briefly the outlook for productivity growth in real (constant dollar) terms in two of Nova Scotia's major foreign markets -- the United Kingdom and the United States. U.K. manufacturers look for an increase in output per head of 3.9 per cent a year during the period, 1964 to 1970. Actual annual increases in 1954 to 1960 and 1960 to 1964 were 2.5 per cent and 3.0 per cent respectively. In the U.S., annual increases of a little over 3 per cent in the economy as a whole are anticipated during the next few years.

GROWTH POTENTIAL AT THE SECTOR LEVEL

The sector employment target according to the previous section appears to be realistic in terms of recent employment trends. We turn now to an examination of the growth potential of the sector in greater detail. This section confines itself to the more general issues affecting all or a number of industries. The following section examines the outlook for specific industries.

The outlook for secondary manufacturing in Nova Scotia during the First Plan period depends on a great many factors some of which are common to all types of secondary industry while others have a more limited significance. Many of the factors are interrelated; a few are relatively independent. Most have been at least alluded to in the previous chapters but they warrant reiteration at this point to facilitate a clearer understanding of their relative importance.

The most important single growth factor is the future level of demand in provincial, national and international markets. Economic conditions are currently buoyant and have been since 1981. This has enabled existing industry to operate at capacity, and in many cases, to expand. New industry has been attracted to the province. A major slackening in demand would lead to an abrupt change in this situation. Existing firms would lay off workers and the flow of new industry would be sharply curtailed. Growth would halt. Fortunately, the short and medium term economic outlooks are both highly favourable, providing the framework and conditions essential to rapid sector growth.

The growth potential of a secondary industry given a generally high level of demand, depends upon its ability to compete in existing and potential markets. Ability to compete is determined by relative costs. These depend upon the location of the industry relative to raw materials and markets and the productivity of the industry in converting raw materials into final products. Productivity is determined in large part by the quality of the labour force in terms of education and by the amount and quality of capital per worker.

What is the significance of these points for Nova Scotian manufacturers?

Historically and speaking in general terms, the costs of goods manufactured in Nova Scotia have been relatively high limiting the ability of provincial manufacturers to compete and making expansion and growth very difficult. This situation has been the result of a number of factors. The natural resource base of the province is limited in both quality and quantity while the manufacturing base has been relatively narrow. This means that manufacturers have had to import a large quantity of their "raw materials" from outside the province adding a considerable transportation charge to the cost of their inputs. Provincial markets have been limited by a combination of low incomes and a small and scattered population. Regional markets have been somewhat larger in terms of total population but they too have been

characterized by low incomes and population scatter. The major natural markets for provincial output have been the eastern seaboard of the United States and, to a lesser extent, various overseas countries. These markets however have been effectively closed to provincial manufactured goods of a secondary nature, with a number of important exceptions, because of high tariff walls and other trade barriers. Thus, provincial manufacturers have had essentially two choices -- to confine themselves to the relatively small and slow-growing provincial and regional markets, or to try to serve as marginal suppliers to the distant but relatively large and lucrative Central Canadian markets. The first choice has meant relatively low distribution costs but high production costs because of insufficient volume. The second choice has meant the reverse. In both cases, however, total costs (production and distribution) have been relatively high. Relative costs in Nova Scotia have been raised even further by low productivity. Nova Scotian producers have been considerably less productive than their Canadian counterparts on average due in large measure to relatively low levels of capitalization and relatively low levels of educational attainment on the part of the labour force generally, but particularly on the part of management. In summary, then, a combination of a poor geographic location relative to raw materials and available markets and low productivity has made it very difficult, historically, for secondary manufacturing in Nova Scotia to flourish.

The picture, however, is not quite so bleak as has been presented so far. Some types of secondary industry have obviously found it profitable to locate in Nova Scotia and it is useful to note briefly the reasons why. The supply of labour has been relatively plentiful and low-cost in Nova Scotia, particularly the unskilled and semi-skilled varieties. This has attracted labour-intensive industries such as textiles, knitting mills, clothing and transportation equipment. Firms in certain industries such as foods and beverages or printing and publishing can achieve an optimum size with a relatively low volume of output, and have located in Nova Scotia to serve local, provincial and regional markets. Other industries such as steel, furniture and non-metallic mineral products have been

attracted by provincial natural resources. Still others such as boatbuilding and clothing shops have developed, in part, in response to the needs of the primary resource-based industries. Any industry, e.g., confectionery, producing a product low in weight but high in value has not found the transportation costs involved in marketing in Central Canada insurmountable, particularly with the help of the subsidies provided under the Maritime Freight Rates Act. Ice-free ports have attracted firms importing raw materials and/or exporting considerable quantities of goods. The large concentration of defence and research establishments in Halifax-Dartmouth has led to the establishment of several specialized firms. A number of industries have benefitted from the national tariff structure and other forms of subsidy (in addition to the subsidy on freight movements already mentioned). Many of these locational advantages have reinforced one another. This list is not meant to be exhaustive but it serves to indicate the major factors operative to date.

What is the growth outlook?

The resource picture is not apt to change significantly during the First Plan period but current research and exploration activity particularly in the areas of tidal power and offshore drilling for oil and gas holds considerable promise for the more distant future.

Provincial and regional markets are growing steadily, if not dramatically, encouraging existing industries to expand and making it more and more feasible for large national and international firms to establish branch operations in the province thus diversifying and broadening the industrial base. Industrial Estates Ltd. feels that the province has an excellent chance of attracting new branch plants. It notes that many companies outside Nova Scotia look at the provincial and regional markets only in terms of their own sales. There may be a dozen firms selling the same product in the area with each getting only seven to ten percent of the total business. If one of these firms would establish a branch plant here, it would secure a competitive advantage enabling it to

obtain a much larger share of the total market. A number of branch plants already in the province claim that their productivity is higher than that prevailing in the parent plants due to the adoption of the latest plant design and machinery and equipment, better trained workers and more aggressive and efficient management. The latest technological developments such as numerical machine tool control often favour smaller plant sizes. Workers are frequently better trained because they are fresh, receptive and free from any prejudices which may have developed in the parent plant, and because their training is geared specifically to the requirements of the new operation. Management is usually more aggressive and efficient because it tends to be younger and better trained, it is often on probation spurring it on to greater efforts, and it is dealing with a smaller and more manageable unit.

The movement towards freer international trade evident in the early 1960's appears to have come to a halt, at least temporarily. It is not likely to affect the growth potential of the sector very much during the remainder of the First Plan period. Domestically, little change is expected in the Maritime Freight Rates Act before 1968. The subject is currently under investigation but few results are expected to emerge until some time in 1967.

It has already been noted that productivity in Nova Scotia is expected to rise at a faster pace than in Canada generally during the next few years. Capital investment outlays are expected to continue their recent upward trend. Government expenditures on education should accelerate assuming provincial revenues remain buoyant and anticipating an increase in the degree of federal participation particularly in the fields of technical and vocational training and higher education.

It was argued previously that the growth potential of secondary industry in Nova Scotia is being retarded by the ADA program which excludes perhaps the most viable growth centre in the province, Halifax-Dartmouth. By diverting industry from this growth centre, ADA impedes its development thus

retarding the process of population and industrial concentration essential to maximum economic growth in the province.

An important part of the secondary manufacturing sector in Nova Scotia is geared to the needs of the national defence program as has been noted. The White Paper on Defence issued in March, 1964 by the Minister of National Defence called for a reduction of 10,000 in defence employment during the next few years with the resultant savings to be spent on military equipment. A recent Atlantic Provinces Economic Council (APEC) pamphlet[1] notes that the precise economic implications of the new defence policy for the Atlantic Provinces cannot yet be determined. Two points, however, can be reasonably concluded. First, military employment in Nova Scotia is not likely to rise during the First Plan period. Second, equipment contracts for defence purposes may rise slightly but the outlook is not especially promising since, according to the APEC pamphlet, in the past over 90 per cent of prime equipment contract expenditures have gone to Central Canada. The Atlantic Region has received only some five per cent. The author of the pamphlet, Mr. Marks, concludes that, "Unless the structure of the regional economy changes rapidly, increases in defence equipment purchases will not be likely to compensate for the impact of reduced defence employment."

In summary, the growth prospects for the secondary manufacturing sector during the First Plan period are generally excellent based upon a combination of expanding markets and increasing productivity. The only soft spots are the retarding influence of the ADA program and the anticipated drop in the level of defence expenditures.

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[1] C.R. Marks, Defence Expenditures and the Economy of the Atlantic Provinces, Pamphlet No. 9 (Fredericton: Research Centre of Atlantic Provinces Economic Council, December, 1965). pp. 20-23.

GROWTH POTENTIAL AT THE INDUSTRY LEVEL

This section pinpoints the apparent growth industries in the sector and gives a brief indication of the outlook for each major industry group and industry.

DOSCO's[1] Sydney Works is the largest single secondary industry in Nova Scotia in terms of employment and output, and should remain so during the First Plan period. Employment in 1964 is estimated at approximately 3,600. Output was 929,000 ingot tons, 10 per cent of total Canadian steel production, and close to the annual capacity of the Sydney Works in that year. Output is expected to rise by five per cent in 1965 to 970,000 ingot tons, by 7.7 per cent in 1966 to 1,050,000 tons, by 19 per cent in 1967 to 1,250,000 tons, and by 6 per cent in 1968 to 1,325,000 tons for a 43 per cent gain over the First Plan period. This rate of increase is expected to exceed the national average and marks the re-emergence of DOSCO as a major competitor in the Canadian steel industry.

DOSCO at present is able to compete in less than half of the total Canadian steel market. Its product mix has been confined to shaped products with particular emphasis on rails. Flat-rolled products, however, are the fastest growing segment of the steel market and comprise in total better than 55 per cent of total domestic steel consumption. DOSCO's new management team, which took over the company's direction in the early 1960's, saw that diversification was badly needed if the firm were to continue growing. The new integrated steel complex planned in Quebec (Sidbec) threatened to squeeze DOSCO out of the Quebec market while export sales, which in 1964 accounted for some one-quarter of total sales, showed little long-term growth potential and were highly unstable in quantity and in price. Thus, the decision was made to orient the firm increasingly towards the domestic market and particularly towards Quebec. A $20 million

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[1] Much of the discussion concerning DOSCO is based upon a November, 1965 report by analyst C.A.C. Fraser of Dominion Securities Corporation Ltd.

rod and bar mill was built at Contrecoeur, P.Q., opening in March, 1965. A rolling mill is under construction on the same site at an estimated cost of $31 million. It is scheduled to come on stream by early 1967 and will enable DOSCO for the first time to produce flat-rolled products -- plate, sheet, strip, etc.

These two mills are to be supplied with "semis" from Sydney where it was found that steel-making capacity could be expanded by one-half to 1,500,000 tons a year at the relatively low cost of $12 million while simultaneously reducing costs of production. This means that DOSCO's basic steel requirements will probably be met largely by the Sydney Works until at least 1970 when the demands of its fabricating plants are expected to equate roughly with the supply potential of Sydney.

The employment implications for Sydney of these developments are very difficult to estimate on the basis of the information available, but it is concluded that employment will increase but not significantly during the First Plan period. The following considerations appear relevant. The investment program at Sydney will involve mainly extensive renovations to the blast and open hearth furnace and less extensive changes in the blooming and billet mills. None of these developments are apt to lead to any great increase in employment. No changes are planned in the rail, rod or bar mills or in the wire and nail departments. Indeed, the rod and bar mills could operate at increasingly lower levels with the opening of the new facilities at Contrecoeur. On the other hand, the demand for flat-rolled products has been much more stable than the demand for shaped products which currently dominate DOSCO's product mix. Opening of the new Contrecoeur facilities should lead to a lessening of the large cyclical fluctuations in output and employment which have been traditional to date. The current strong demand for rails should continue during the next few years. A number of competing rail rolling mills in the U.S. and Europe are reported to have been dismantled recently. Railway building continues in a number of overseas countries including Mexico, India, Australia and Brazil. In summary, employment should increase somewhat during

the First Plan period partly as a result of the estimated 43 per cent increase in ingot production but more importantly because of the anticipated strong demand for rails. The more basic, underlying employment trend, however, appears to be relatively stable, despite the planned 50 per cent increase in steelmaking capacity, as a result of higher productivity and a levelling of demand fluctuations.

Other primary metal producers (largely iron foundries) in Nova Scotia, although small in relation to DOSCO, represent an important source of employment and can probably look forward to continued, if not spectacular, growth during the forecast period.

DOSCO's Trenton Works is managed by Hawker Siddeley Canada Ltd. and produces railway freight and tank cars, medium and heavy forgings and all the axles made in Canada for railway and subway cars. The capacity of the car shops runs at some 4,000 cars a year. Employment fluctuates enormously but averages about 1,400. DOSCO is the second largest firm in the Canadian railroad rolling stock industry. Nationally, new orders have fluctuated in recent years in response to changing economic conditions from a high of $189 million in 1957 down to $30 million in 1963 back to $150 million in 1965. More than 5,000 freight cars were ordered in total by the Canadian National and the Canadian Pacific in 1965. About 1,300 were ordered from DOSCO. Further orders can be expected in 1966 indicating a high level of employment at the Trenton Works (but no new capital expenditures) during the First Plan period.

Relatively little employment growth is foreseen at the moment in the remainder of the transportation equipment industry group during the next few years although the outlook could change as several major uncertainties clarify themselves.

Shipbuilding employment is expected to stabilize between 2,000 and 2,500 with the help of the new federal subsidy program announced on January 17, 1966 and designed to replace an older program suspended in February, 1965. The Financial Times of Canada reported on January 24 that the new program was

part of a "far-reaching policy of enforced productivity for Canadian industry". The reduction in the general subsidy rate involved, from 33 per cent to 25 per cent during the 1966 to 1969 period, and from 25 per cent to 17 per cent by 1972, has led Halifax Shipyards, the largest firm in the Nova Scotian industry, to comment that it will be increasingly difficult to obtain new orders for tugs and barges. The Nova Scotian yards are expected to turn increasingly to the construction of steel fishing trawlers which are in strong demand as a result of continued expansion in primary fishing operations and a 50 per cent federal subsidy on fishing vessels. The federal government expects to place orders valued at $400 million for new ships in Canada on a more or less competitive basis before 1971 and Nova Scotian yards can reasonably expect to get some of these in addition to a continuing volume of repair work for the navy. Halifax Shipyards is attempting to diversify its output in order to stabilize employment at about 1,200. It can only build ships up to 15,000 tons in its present site preventing it from taking advantage of the rapid increase in the world demand for larger ships. European and Japanese yards are now building vessels in the 150,000 ton class and even bigger ships are being planned. There is enormous surplus capacity in world shipyards however and profit margins are declining. Thus, Halifax Shipyards is turning increasingly to the field of industrial fabrication where it can use existing labour skills. It has already received orders to supply oil heaters for the Great Oil Tar Sands project in Alberta and specialized piping for the Glace Bay heavy water plant.

The future of Nova Scotia's fledging auto assembly industry is highly uncertain. Volvo Canada Ltd. began production in Dartmouth in 1963 but growth to date has been less than oridinally anticipated. Production in 1965 was approximately 3,400 units. This is expected to increase 10 per cent to 3,700 in 1966. Employment totals roughly 110. Volvo has to find a new plant site by the end of 1966 when its current lease expires. It is negotiating with IEL but is reluctant to commit itself for more than one year at a time until the current tariff agreement under which it operates in Canada expires late in 1967.

This agreement provides for import duty concessions; if these are not continued after 1967, Volvo may find it impossible to continue any assembly operations in Canada. Canadian Motor Industries Ltd. was to have begun assembling various Japanese cars in Sydney by mid-1966. Financial difficulties have led to a postponement of this project however until the Japanese cars involved demonstrate their ability to compete in the Canadian market on a scale sufficient to warrant the establishment of assembly operations.

It is unlikely that the auto industry will employ more than 150-200 workers in Nova Scotia by 1968; it is quite possible that there will be no industry at all by that date. This latter development, if it materializes, would be a setback of some importance for Nova Scotia's secondary manufacturing sector. Automobile manufacturing is the most important secondary industry in Canada. It accounts by itself for nearly four per cent of the Gross National Product. It is a major "cornerstone" industry in that it purchases substantial proportions of the output of a wide range of other secondary industries. It has excellent growth potential. Traditionally, the industry has been highly centralized in large production units but this situation is beginning to change. Some decentralization is currently underway, particularly in the area of assembly operations where the "economies of agglomeration" are least significant. Quebec has attracted two new plants. Nova Scotia has one and the possibility of another. If a portion of the national industry were to develop firm roots in Nova Scotia, it would represent an important diversification of the provincial economy and a major increase in its growth potential.

Boatbuilding is a relatively small (approximately 250 employees) but important industry in the transportation equipment group and should exhibit considerable growth during the First Plan period as a result of continuing demand for pleasure craft and for small commercial vessels.

Fairey Aviation in Dartmouth employs approximately 800. The firm is still geared primarily to the repair, overhaul and conversion of military

aircraft, the manufacture of aircraft components, and the research and development of engineering devices for military use although it is undergoing a rapid process of diversification. The outlook for defence equipment and maintenance contracts remains uncertain as noted previously. However, Fairey's new Beartrap helicopter haul-down system is proving of great interest to the Canadian navy, and could result in sizeable export orders. The emphasis on research, development and diversification has already produced the Fairey Fairlift, a mobile chain beam loader mounted on an ordinary truck, which has been exported to the U.S. and Britain as well as being sold domestically. Fairey is presently engaged in the development of materials handling and automation systems for trawlers and fish processing plants. It also manufactures equipment for the water-bombing of forest fires. It works closely with various federal research agencies located in the Halifax-Dartmouth area. While it is impossible to make any employment forecasts, the future of the firm would appear to be reasonably bright.

The third major industry group in Nova Scotia during the post-war period in terms of employment, after primary metals and transportation equipment, was foods and beverages. Employment grew slowly but steadily during the 15-year period, 1947 to 1962, at an annual rate of 1.4 per cent and no reason can be seen why this rate of growth should not be maintained during the forecast period. Demand will probably rise at a faster rate but its employment impact should be offset somewhat by rising productivity.

Employment prospects in the furniture and chemicals industry groups are particularly bright as a result of the new Clairtone and Deuterium plants, both of which appear to have excellent growth potential. Clairtone has been assigned to the furniture group for the time being on the basis of its manufacturing operation in 1965. It might more appropriately be assigned to the electrical products group at some point in the future depending upon the nature of the changes, if any, in its production facilities.

The furniture industry in Nova Scotia showed very little growth during the 10-year period preceding the addition of the Clairtone plant in 1965. Employment was stable at roughly 300, and output was geared largely to institutional requirements. The provincial market for furniture was much larger than provincial output indicating a tremendous growth potential; no growth occurred, however, as a result of strong competition from Central Canada where the national industry is concentrated, and from U.S. imports. The national industry is expected to show a sharp increase in productivity during the next few years in the face of a rapid increase in the level of U.S. imports. The emphasis will be on concentration and specialization and on research, especially in the areas of design, production and marketing. Thus competition in the Nova Scotian market can be expected to accelerate and the traditional provincial producers will find it increasingly difficult even to maintain existing levels of output unless they too display sharp advances in productivity. Seen in this light, the Clairtone plant must be termed an exception to the general provincial pattern. The growth potential of the industry group as a whole probably lies in this one firm. Clairtone had some 400 employees at the end of 1965. It could be employing 800 by July, 1966 according to its president, Mr. Peter Munk, if it decides to enter the new field of colour television. The firm exports a considerable portion of its output, it is in a highly competitive industry, it is willing to take risks, and as mentioned above, it appears to have an excellent growth potential.

Employment in the chemical and chemical products industry group declined steadily throughout the post-war period from an estimated 450 in 1947 to some 300 in 1964. Growth prospects during the First Plan period, in sharp contrast, appear to be excellent. The Deuterium heavy water plant is scheduled to begin production July 1, 1966 with an estimated 200 employees and at an annual rate of 200 tons. It will supply both national and international markets. The plant is designed so that its production capacity can be easily doubled. It appears likely that it will be asked shortly to proceed with the construction of additional capacity and the annual production rate by 1968 will

probably be 400 tons. The employment implications of this additional output are not immediately known. Four additional chemical plants for the province have been announced recently. Union Carbide Canada Ltd. is to build a polyethylene extrusion and conversion plant at Amherst to supply packaging material to the Atlantic Region. The plant will employ 40 to 50 workers. A small fertilizer processing plant to supply local markets will be built at Central Onslow, near Truro, by Canadian Industries Ltd. Imperial Oil Ltd. is constructing an $800 thousand sulphur extracting plant adjacent to its Dartmouth refinery with a daily production capacity of 35 long tons. It will supply regional markets and in particular the pulp and paper industry. New employment as a result of the plant will be negligible but it represents the first petrochemical development in Nova Scotia and illustrates the cornerstone potential of an oil refinery. Marden-Wild Corp. has announced plans for the construction of a 12,000 sq. ft. tanning oils processing plant at Amherst.

Metal fabricating was one of the six industry groups where employment declined during the post-war period as a whole. The growth potential of the group appears to have improved in recent years, however; since 1957 it has been responsible for the most new plants and plant expansions of any group in the secondary manufacturing sector. Employment turned upwards in 1962 and is expected to continue to grow during the First Plan period. One of the most promising growth areas is the production of aluminum and tin cans. Maritime Cans Ltd. opened its new Dartmouth plant on November 30, 1964. Employment was roughly 45; the plant size was 32,000 sq. ft. The growth in demand for its products to date, particularly the aluminum line, has been phenomenal. Employment increased to approximately 60 in June, 1965 and to 75 in October, 1965. It was announced recently that the plant size will be doubled. At least four breweries have announced that they are switching to aluminum cans -- Oland's and Moosehead in Nova Scotia and Dow and Molson's in Quebec. Continental Can Company of Canada Ltd. opened a new 30,000 sq. ft. metal container plant at Kentville in September, 1965. Another but much more remote, growth area is the production of

iron powder or briquettes and sponge iron for blast and steel furnaces by the direct reduction of iron ore using oil products. Imperial Oil has a $13 million research program underway in Dartmouth to develop the Esso-Little fluid bed process originated in the U.S. for this purpose. Company officials are reluctant to give further details.

The electrical products group appears to have excellent growth potential. It employed some 540 workers in 1964 in three firms. A considerable portion of the output is in the labour-intensive, low weight, high value category making it competitive nation-wide. EMI-Cossor is the major firm in the group. It was highly defence-oriented until 1958 when a major diversification program was undertaken. It claims to have strong development and manufacturing capabilities in the areas of underwater electro-acoustics, communications and direction finding systems, ionospheric sounding equipment, antennas, etc.

Only modest growth in employment during the First Plan period is seen for four industry groups -- paper products, machinery, non-metallic mineral products and miscellaneous industries. All are relatively small (200-400 employees), all have a record of growth during the post-war period, and all cater primarily to provincial and regional markets. The machinery group was the least productive in Nova Scotia in 1962 relative to national averages and faces heavy import competition and the possibility of a reduction of the Canadian tariff on U.S. imports. Industrial machinery, broadly defined, has replaced automotive equipment as the largest single item in Canada's trade deficit with the U.S. The federal government has under consideration a new plan for restricted free trade with the U.S. in industrial machinery which could have serious implications for Nova Scotian producers. The outlook for construction will govern future output trends in the non-metallic mineral products group. Producers in this group appear to be laying particularly heavy emphasis on productivity improvement. Major industries in the miscellaneous group include dental laboratories, signs and displays, ophthalmic goods, venetian blinds,

plastic fabricators, toys and games, rubber stamps and stencils, and artificial ice.

Nova Scotia would appear to have considerable potential for increased employment in the textile industry. Five new firms have located in the province since 1957 providing employment for some 390 people. Total employment in the industry turned upwards in 1960 after more than a decade of decline and should continue growing during the First Plan period. A recent study[1] indicated that the demand for textiles in Canada will increase by one-half over the next decade and the industry could provide up to 20,000 more jobs than at present. Nova Scotia should be able to share in the anticipated expansion on the basis of three factors: favourable labour costs, access to raw materials on world markets, and the relatively high value-low weight nature of much of the potential output. Several of the existing provincial producers market nation-wide and this marketing pattern can be expected to continue.

Nova Scotia would appear to have a considerable comparative advantage relative to Ontario-Quebec in the production of knitted goods and clothing. Both industries are highly labour-intensive and over two-thirds of the workers are female giving the province a strong labour cost advantage. As with textiles, raw materials can be purchased on world markets and transportation costs are relatively low, permitting nation-wide distribution. Knitting mill employment has grown more or less steadily in Nova Scotia for more than a decade and this trend should continue and even accelerate. Productivity in the industry approaches the national average. Stanfield's Ltd., Truro, is by far the largest firm in the industry employing more than 700 workers. Its sales are reported to have doubled in the last 10 years and to show a steady increase of 10 per cent a year. The clothing industry, in contrast, has shown relatively little growth in employment during the past decade although a potential for growth would appear to exist.

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[1] Canadian Imperial Bank of Commerce, "Textiles in Canada", Commercial Letter (Toronto: October, 1965.)

Three industry groups -- leather goods, printing and publishing, and petroleum and coal products -- appear to have little prospect of increased employment during the First Plan period on the basis of historical trends and/or current information.

Two industry groups -- tobacco products and rubber -- are not represented in Nova Scotia at the present time and there is little indication of a change in this situation during the next few years.

In summary, the industry groups having the greatest potential for increased employment during the First Plan period appear to be primary metals (especially iron and steel) transportation equipment (especially railroad rolling stock, aircraft repair and boatbuilding), furniture, chemicals, electrical products, metal fabricating, textiles and knitting mills. The industry groups with more modest growth prospects appear to be foods and beverages, paper products, machinery, non-metallic mineral products, miscellaneous industries and clothing. Increased employment is unlikely in leather goods, printing and publishing, and petroleum and coal products. No employment is likely in the tobacco products and rubber industry groups.

This section has been necessarily brief and patchy. An interpretation of the growth prospects confronting existing industries has been presented, but the possibility of completely new industries locating in the province has generally been ignored. Needless to say, this is an important omission but one that could not possibly be investigated given the time and research resources available. The forecasts are presented in general terms only; specific projections or the setting of targets at the industry level have been purposely avoided because of lack of sufficient information.

VI. SOME CONCLUDING COMMENTS AND RECOMMENDATIONS

SOME CONCLUDING COMMENTS AND OBSERVATIONS

Perhaps the single most important conclusion emerging from this study is the overwhelming need for productivity improvement in Nova Scotia, both absolutely and relatively, if industry is to compete and to grow. Industry and government have equally key roles to play in this regard. Industry must make greater efforts to upgrade the education and training of its workers with particular emphasis on management training; it must also increase the quality and amount of capital in use. Government, and in particular the provincial government, must give a much higher effective priority to what the Economic Council of Canada calls "growth-related" expenditures -- i.e., expenditures on education, health, transport facilities, research, natural resources development and industrial promotion.

The study has given strong support to the policy shift made by Industrial Estates Ltd. in 1963 when it was decided to concentrate more upon the attraction of capital-intensive, highly-productive industry as one of the best ways of accelerating provincial economic growth. Authoritative evidence indicates that labour-intensive industries are generally less productive in terms of output and income than capital-intensive industries. Further, the productivity differential between the two tends to be greater in low-income than in high-income areas. The conclusion for Nova Scotia is obvious. Despite its great interest in accelerating employment growth, the province's industrial development program should never be governed solely by employment considerations. Productivity considerations are even more important.

It has been shown that autonomous growth forces are at work in the secondary manufacturing sector in response to increasing linkage opportunities and growing regional markets. More and more small plants are locating in the province without overt government assistance and this trend can be expected to continue and even to accelerate given greatly increased research on linkage and market opportunities.

Certainly IEL will need to continue and to intensify its promotional efforts during the next few years to bring larger industrial operations competing in national and international markets into the province which would not likely come so soon on their own, to diversify further the present manufacturing base, and to ensure the maintenance of the current growth momentum. One can foresee, however, a gradual decline in the relative importance of IEL as a generator of new employment as self-sustaining growth becomes more and more a reality.

A special Voluntary Economic Planning staff committee has examined the key subject of increased industrial and population concentration in Nova Scotia and a detailed report on its findings will be published in the near future. It is sufficient to note here that the committee endorsed the "growth centre" approach to economic development and suggested that the lack of a growth centre development strategy in Nova Scotia to date has been one of the major impediments to accelerated economic growth. This study noted that the federal Area Development Agency program as presently constituted conflicts with a growth centre development strategy for Nova Scotia. The ADA program also appears to conflict with the new federal manpower mobility program. Again, the point is obvious. There must be much closer liaison and co-ordination in future both between the various federal development policy-makers and between federal and provincial development strategists.

We have suggested that the ADA program has reduced the competitive position of IEL by reducing its uniqueness. On the other hand, the programs of the two agencies complement one another and together appear to offer an industry-inducing package unrivalled anywhere else in Canada.

Tariffs and transport facilities are highly relevant to the growth prospects of the secondary manufacturing sector. They have been examined in depth by the Voluntary Planning Board and the results are presented in its First Plan report.

One serious omission in this report is an

examination of the relationship between research and development activity in Nova Scotia and growth potential. We do not know the extent to which Nova Scotian firms are using provincial research facilities or the various federal incentives to research and development in industry such as GIRD and PAIT. This question should be investigated at the earliest possible opportunity.

RECOMMENDATIONS

This section presents a "plan" for the accelerated growth of secondary manufacturing in Nova Scotia. The proposals include those of the Secondary Manufacturing Sector Committee and others based on the findings and conclusions of this report.

SECONDARY MANUFACTURING SECTOR COMMITTEE RECOMMENDATIONS

1. The Department of Labour, both provincial and federal, should promote more in-plant training in order to ensure that the labour force achieves a standard of proficiency in keeping with the latest technological developments. Inducements for industry to institute such a program can be provided through tax concessions similar to the accelerated write-off as presently applied to research and development expense.

The development of vocational and trade school curricula, in order to be consistent with the needs of industry, requires closer co-operation of educational and industrial leaders. There are many agencies presently engaged in preparing briefs concerning various aspects of the vocational education and apprenticeship programs.

Some of the agencies who, in the coming months, intend to present briefs on education to the government authorities are:

Canadian Construction Association

Canadian Manufacturers' Association

2. The highway system of the province is vital to the prosperity and economic growth of Nova Scotia and it is imperative that steps should be taken immediately to upgrade the main trunk network to all weather standards. Also, the maximum load limits should be made consistent with those of neighbouring provinces and areas of the United States.

The urgent necessity of such a highway improvement program cannot be mitigated when one considers the retarding effect of spring closure and long period of reduced weight limit. Every effort must be made to bring about these improvements so that local firms will be able to serve the market more efficiently and to remove the need for maintaining large inventories during the spring closure periods.

3. In 1962 the Gill Commission recommended changes in the policies of the Unemployment Insurance Commission in order to reduce or eliminate the possibility of abuse by both employers and employees. The Gill Commission's recommendations pertain to the need for confining the plan to the payment of indemnity for wages lost by reason of failure to obtain employment. It was felt that the insurance plan should not become an income supplement, nor should it pay benefits to seasonal workers during their off season when they have never worked in that period and do not intend to work.

The manufacturing sector committee recommends that the policies of the Unemployment Insurance Commission be altered in accordance with the Gill Report in order to remove the possibility of abuse by unscrupulous persons. It is also recommended that inducements be provided which will encourage the seasonally unemployed to prepare themselves for, and to seek, alternate employment during the off season.

4. Those employers in the province who require new skills within their manufacturing operations should endeavour to acquire these tradesmen from the Nova Scotia labour force through a program of retraining.

There will be, however, increasing requirements for personnel in certain trades which cannot be fulfilled through the existing training facilities. The relatively small number of the specially skilled tradesmen required will not justify a large expenditure for the appropriate training facility and, therefore, it is recommended that immigration from other provinces and other countries be encouraged in these skills.

5. In current national and international business activities all smaller enterprises are seriously handicapped by their inability to take advantage of the highly developed and specialized management services employed by the larger corporations, with whom they are in competition.

It is recommended that smaller firms take advantage of the many allied services offered by government, educational and industrial organizations to minimize this handicap.

In addition to these public services, management consulting firms are available for the analysis and solution of industrial problems. In cases where such services would be prohibitively expensive for one firm to bear alone, several firms facing similar problems should engage their services on a joint basis.

6. Smaller local industries are experiencing difficulties in competing against the more highly developed and intensively promoted products of the national and international corporations.

It is recommended that Nova Scotia firms improve their competitive position by giving more serious attention to the standardization and improvement of product design, to preparation and distribution of adequate sales brochures, and to aggressive personal contact sales promotion. In addition, maximum advantage should be taken of government sponsored trade expositions both at home and abroad. Industrial organizations and the appropriate departments of both the Provincial and Federal Governments are frequently able to provide much help in these

matters at very modest cost.

7. The lack of adequate working and investment capital is severely handicapping industrial firms generally and the smaller firms in particular. In many cases, smaller firms could qualify for more substantial loans from available financial institutions if management were better able to prepare more detailed and reliable financial analysis of their firms' position and future potential. This inability frequently stems from insufficiently detailed records of past and current financial performance.

It is recommended that firms experiencing difficulties in the acquisition of adequate working and investment capital seek the advice and services of the many qualified men and organizations experienced in these matters when they are preparing applications for loans.

POLICIES FOR THE ACCELERATED GROWTH OF SECONDARY MANUFACTURING

In order to realize the goal of accelerated growth in secondary manufacturing in Nova Scotia, increased concentration of industrial activities should be encouraged by the Provincial Government.

Those areas which have demonstrated a real potential for growth should be recognized and designated as industrial development centres.

Definite action should be taken to make these centres especially attractive to secondary manufacturing. The functions of provincial agencies involved in this endeavour must be clearly defined so as to ensure co-ordination of effort. Every attempt must be made to increase productivity levels in the secondary manufacturing sector and factors affecting these levels should be examined in depth.

Establishment of Industrial Development Centres -- The establishment of these centres will require the adoption of certain policies to ensure that these centres become attractive locations for cornerstone industries and industrial concentration. These

policies relate to financial incentives, industrial parks, community planning and housing. While industrial development centres are given priority and these policies are directed solely to their establishment, other communities in the province have a particular appeal to certain types of industry. These localities should not be overlooked for general expansion of the secondary manufacturing industry in the province. Communities such as these should be encouraged to establish their own industrial planning commissions and parks in co-operation with provincial agencies. Industrial Estates Limited should continue to promote the whole province and the communities should continue to attract industry which finds the larger industrial development centres unattractive for their operations.

The development of industrial development centres is of paramount importance to the whole economy of Nova Scotia. In some instances, industries may wish to become established outside of these areas of concentration, and every assistance should be given to their establishment. However, no measures or policies which adversely affect the potential for growth of the industrial development centres should be instituted.

Financial incentives should be offered to industries locating in all industrial development centres. Incentives are already available throughout the province, with the exception of the Halifax-Dartmouth area, through the federal Area Development Agency. Similar incentives should be offered in this centre. The Area Development Agency has a national programme applied consistently across the country. Federal officials have stressed repeatedly that the Area Development Agency programme cannot be altered solely to discriminate in favour of the Halifax-Dartmouth area. However, it has been emphasized by those concerned with economic development, including the Economic Council of Canada, that growth of the national economy is best fostered by balanced regional growth. It is further realized, in order to accomplish this objective, that growth in lagging regions is best obtained by developing those areas within the region which have the most potential. The present programme of the Area Development Agency does not

recognize such a principle. Efforts should be made to change the policy of the Area Development Agency programme so that it will be in accordance with this principle, that is, the whole Atlantic Region should be a designated area under the Area Development Agency programme. The Atlantic Development Board in its forthcoming plan for the region should also stress the necessity of such a change.

Until such a change is implemented it is recommended that funds be made available for this purpose by the Atlantic Development Board which was created specifically to assist with the economic revitalization of the Atlantic Region. Industries locating in the Halifax-Dartmouth area would thus be eligible for capital grants from this fund equivalent to those available under the Area Development Agency programme in the rest of the province. Adoption of the proposal will mean that equivalent financial incentives will be available to industries locating anywhere in Nova Scotia.

Industrial Estates Limited should, among its other functions during the period of the first plan, establish and operate industrial parks in the industrial development centres. Similar parks might be established elsewhere in the province at a later date. As the Sydney-Glace Bay area is the largest metropolitan area in the Island of Cape Breton, Industrial Estates Limited should establish a park there as soon as possible. The Provincial Government should ask the Atlantic Development Board to assist in the financing of a Sydney industrial park through the provision of land and services. This park should be turned over to Industrial Estates Limited for management. All industrial development centre parks should be expanded according to need. Each might emphasize a particular "mix" of industries in order to enhance its attractiveness. This possibility should be investigated by Industrial Estates Limited in conjunction with the appropriate provincial economic and market research agencies noted below.

A building of the "advance factory" type will be available in the New Glasgow area when Clairtone moves into its permanent quarters. Industrial

Estates Limited should pay particular attention to the attraction value of this building as a guide to the feasibility of future construction of similar structures in advance of known demand in the industrial parks. If the New Glasgow factory proves successful as an added form of inducement to new industry, Industrial Estates Limited should give consideration to a policy of maintaining continuously one advance factory in each industrial park. These buildings might be used for short-term warehousing purposes during those periods in which they would otherwise be vacant.

Environmental improvements in the industrial development centres should be given a high priority by the Provincial Government through the Community Planning Branch of the Department of Municipal Affairs. Regional planning commissions already exist in some centres. Their work should be given every possible encouragement. A much closer degree of liaison and co-ordination is desirable between economic planning and physical planning. It is suggested that the Community Planning Branch request the regional planning commissions in the industrial development centres to invite appropriate members of the Board to sit in on their meetings in an advisory capacity. It is suggested that arrangements be made for continuous liaison between the professional staff of Voluntary Economic Planning and the professional regional planners.

Plans should be formulated jointly by the regional planning commissions, the Community Planning Branch, the Nova Scotia Housing Commission and the Central Mortgage and Housing Corporation to ensure that adequate and suitable low-cost housing is available in the industrial development centres as needed for the expected influx of factory workers.

Immediate attention should be given to the types of secondary manufacturing industry that might be attracted to the industrial development centres. A special economic research unit should be established in the government service for this purpose. This unit should start, at the earliest possible time, detailed industry feasibility studies, focussing on

matters such as location determinants, minimum and optimum plant sizes, markets, production processes, linkages with existing and prospective industries, productivity levels, capital requirements and transport needs. Research results would then be turned over to Industrial Estates Limited, which at present does not have such information at its disposal. If such data were provided, the promotional efforts of Industrial Estates Limited could become even more effective in reaching the goal of accelerated economic growth. In other words, the economic research unit would become part of a provincial research effort designed to make Industrial Estates Limited even more competitive as a promotional agency.

Particular attention should be directed to the concept of cornerstone industries. Such industries already exist in Nova Scotia, but related industrial growth of the type usually associated with cornerstone plants has up to now been disappointing.

The economic research unit should give priority to the research needs of the industrial development centres. It should recommend the types of cornerstone industries and industrial complexes that are best suited to these centres. At a later date, attention could be given to a much wider range of activities including the industrial growth potential of the many smaller urban centres in the Province. Staffing the economic research unit will not be easy. Competitive salaries must be authorized by the Civil Service Commission and a vigorous advertising programme must be undertaken.

Function of Provincial Development Agencies

It is essential that the functions of the three provincial agencies most closely concerned with secondary manufacturing -- Department of Trade and Industry, Industrial Estates Limited, and Voluntary Economic Planning -- be clearly defined to eliminate misunderstanding and duplication of effort.

Industrial Estates Limited should continue to be the main promotional agency in Nova Scotia for attracting new industry. To date, its efforts have met with phenomenal success. It is not likely,

however, that this extraordinary record can be maintained without adding significantly to the staff of the agency. Two points need emphasizing. First, development authorities stress that, normally, industrial promotion efforts achieve success at the rate of one new plant for each three and one-half man-years' work by promotional personnel. By this criterion, Industrial Estates Limited's record is abnormally good, and by definition, abnormal success is not likely to continue indefinitely. Industrial Estates Limited must be expanded if it is to continue attracting new industry to the province at past rates. Second, past rates of attraction must be increased over the plan period if the employment targets set out in the plan are to be achieved. In other words, the province must accelerate its promotional efforts.

Industrial Estates Limited should not confine its promotional activities to the industrial development centres. Such a limitation is neither necessary nor desirable.

It is recommended that Industrial Estates Limited remain solely a promotional agency. It should not be distracted by the burdens of additional responsibilities.

Voluntary Economic Planning should continue to be the main economic planning body in Nova Scotia. Until now, it has been concerned mainly with the formulation of medium and long-term economic plans. Its functions should be expanded to include the following responsibilities:

1. publication of a quarterly economic review which would feature tabular material and related commentary on current economic conditions;

2. publication of an annual economic report which would indicate the progress being made in meeting the plan objectives, the obstacles being encountered, and the means of removing them. This report could also present revised plan targets on an

annual basis if such a procedure was felt to be desirable; and

3. research into the development of new provincial economic data series to supplement those available from the Dominion Bureau of Statistics. Examples of desirable new economic information are:

   (a) capital stock estimates and capital/output ratios by industry; and

   (b) profit levels by industry.

The Economic Services Division of the Department of Trade and Industry should continue to provide an advisory service to industrial and business firms in the province and elsewhere consisting of business information and market research. It should also continue to assist Nova Scotia municipalities in their development efforts.

Other provinces, e.g., Ontario, have been expanding the range of business information services available through their trade-promotion departments. Similar expansions are necessary in Nova Scotia in order to maintain a competitive position. The Economic Services Division should therefore prepare detailed proposals for those additional services which it considers desirable, showing estimated benefits and costs for presentation to Cabinet.

The Economic Services Division should continue to be the main market research agency in the Provincial Government servicing the general business public and other government departments and agencies including Industrial Estates Limited. The basic distinction between the Economic Services Division and the proposed economic research unit might be stated as follows: the former would initiate market research only upon request while the latter, being primarily an economic research body, would initiate market research in connection with specific industry feasibility studies when and as it saw fit. The

Economic Services Division would be oriented towards serving industry; the economic research unit would be oriented toward basic economic research. In some respects, Economic Services might be considered as a buffer for the unit and against short-term distractions. Basic economic research proceeds best when it is undisturbed. Close and continuous liaison would need to be established between the two bodies for maximum efficiency and effectiveness.

The key factor in market research, apart from quality, is timeliness. The Economic Services Division is currently understaffed due, to a large extent, to the difficulties involved in recruiting economists and statisticians at existing salary levels. The Civil Service Commission should be asked to review its current salary schedules for professional staff and raise salaries to competitive levels as soon as possible.

The Economic Services Division should continue to be the main source of information in the Provincial Government on specific industrial inquiries.

The Department of Trade and Industry administers the Industrial Loan Act and the Industrial Development Act. It is highly desirable that the province be as flexible as possible in the pursuit of the general objective of increased economic growth. It is recommended that the Industrial Loan Act be reviewed by the department with a view to establishing whether or not it meets today's requirements in relationship with other financial inducements provided through other agencies.

Improved Productivity -- The average level of productivity in the secondary manufacturing sector in Nova Scotia was considerably below the national average in 1962, the latest year for which figures are available. The reasons for this productivity gap, which is common in varying degrees to all broad groupings within the sector, have not yet been precisely determined. Much more detailed investigations will be necessary for this purpose. Preliminary research, however, points to three factors:

1. the prevalence of "habit management" in Nova Scotia, including a need for more management training, not only for improved productivity in production, but for more aggressive and advanced marketing techniques;

2. lower levels of capital investment per worker than elsewhere, indicating a need for the adoption of more capital-intensive industrial technologies; and

3. lower levels of education than elsewhere indicating a need for more employee upgrading programs.

To some extent, these three factors are inter-related. Investigations to date have also revealed the following:

> some of the most productive plants in Nova Scotia are branch operations of national or foreign companies. Usually, they are built to the optimum economic size, incorporate the latest technological developments and are run by managers using the latest management techniques.

The major factors affecting productivity levels in the secondary manufacturing sector should be examined in depth to confirm or deny preliminary findings and to suggest ways whereby productivity might be improved. The necessary studies will be complex and will involve contributions from knowledgeable people with a wide variety of backgrounds. The proposed economic research unit might be a suitable agency for this purpose. The Provincial Government should ask the Atlantic Development Board to support the project with technical and financial assistance. In the meantime, immediate action can be taken in two areas.

Firstly, increased efforts should be made to improve productivity in existing industries. Examples of measures which might be adopted are:

(a) greater application of the proven work study techniques available from the Atlantic Region Work Study Centre at the Nova Scotia Technical College;

(b) more widespread implementation of operations research and industrial engineering techniques;

(c) improvement in the quality of industrial technology in many areas of secondary manufacturing -- for example numerical machine-tool control is still non-existent in Nova Scotia yet it offers a practical solution to some of the problems involved in short production runs and minimum economic size plants;

(d) more emphasis on management improvement measures such as participation in the National Industrial Conference Board programme, possible formation of a provincial body similar to the new Manitoba Institute of Management, the Annapolis Valley project of the Dalhousie Institute of Public Affairs, or the joint foreman-training programme of Dominion Steel and Coal Corporation and National Sea Products Ltd. of Louisburg; and

(e) greater stress on employee up-grading schemes such as the joint projects of the Departments of Education and Labour.

Secondly, special efforts should be made by Industrial Estates Limited to attract firms in industries which usually display very high productivity levels -- e.g., petroleum products and chemicals.

The need for improved productivity in Canada as a whole and in the various regions is stressed repeatedly in the Second Annual Review of the Economic Council of Canada. It suggests that increased

productivity is the key to achievement of the national economic goals set for 1970 but warns that productivity must expand at a faster rate during the next five years than it did in 1964 and 1965 if these goals are to be realized. The lesson for Nova Scotia is obvious. Growth in provincial productivity levels in all sectors of the economy must exceed national growth rates if the competitive position of the province is to be improved. Increased productivity has been accorded a very high priority at the national level. It must be accorded an equally high priority in Nova Scotia.

STATISTICAL APPENDIX

Table A-1. SECONDARY MANUFACTURING IN NOVA SCOTIA BY INDUSTRY GROUP AND INDUSTRY, 1961 and 1962

*SIC Code	Industry Group & Industry*	Establishments 1961	Establishments 1962	Establishments 1962/1961 %	Gross Value of Shipments 1961 $'000	Gross Value of Shipments 1962 $'000	Gross Value of Shipments 1962/1961 %	Value Added 1961 $'000	Value Added 1962 $'000	Value Added 1962/1961 %
01	Foods & beverages	134	131	-2.2	42,853	46,591	+8.7	18,978	20,446	+7.7
129	Bakeries	(78)	(73)	(-6.4)	(10,074)	(10,864)	(+7.8)	(4,837)	(5,283)	(+9.2)
141	Soft drink mfg.	(25)	(26)	(+4.0)	(5,539)	(5,833)	(+5.3)	(3,689)	(3,748)	(+1.6)
04	Leather industries	3	3	-	Included below under "Total Confidential Data"					
05	Textiles	7	8	+14.3	(5,482)	Confidential		(2,965)		
06	Knitting mills	7	7	-	9,140	10,444	+14.3	4,376	5,039	+15.2
07	Clothing	11	11	-	2,211	2,439	+10.3	880	988	+12.3
2431	Men's clothing factories	(6)	(6)	-	(1,359)	n.a.		(448)		
09	Furniture and fixtures	33	32	-3.0	2,247	2,047	-8.9	1,208	1,158	-4.1
261	Household furniture	(27)	(26)	(-3.7)	(819)	(480)	(-41.4)	(437)	(260)	(-40.5)
10	Paper & allied industries	2	3	+50.0	4,265	4,816	+12.9	1,869	2,249	+20.3
11	Printing, publishing, etc.	79	75	-5.1	12,223	13,126	+7.4	9,114	10,102	+10.8
286	Commercial printing	(43)	(41)	(-4.7)	(2,970)	(3,185)	(+7.2)	(1,779)	(2,247)	(+26.3)
289	Printing and publishing	(27)	(27)	-	(8,599)	(9,187)	(+6.8)	(6,908)	(7,346)	(+6.3)
12	Primary metal industries	7	5	-28.6	Confidential					
13	Metal fabricating	46	49	+6.5	18,939	20,440	+7.9	8,705	9,082	+4.3
303	Ornamental and architectural	(9)	(11)	(+22.2)	(1,363)	(2,028)	(+48.8)	(862)	(1,015)	(+17.7)
308	Machine shops	(24)	(23)	(-4.2)	(1,919)	(2,353)	(+22.6)	(1,165)	(1,345)	(+15.5)
14	Machinery	5	6	+20.0	2,121	2,046	-3.5	1,715	1,228	-28.4
15	Transportation equipment	65	67	+3.1	28,329	37,477	+32.3	16,674	22,375	+34.2
327	Shipbuilding and repair	(17)	(17)	-	(15,150)	(16,309)	(+7.7)	(9,078)	(10,607)	(+16.8)
328	Boatbuilding and repair	(40)	(43)	(+7.5)	(917)	(1,413)	(+54.1)	(572)	(886)	(+54.9)
16	Electrical products	3	3	-	Confidential					

Table A-1. (Continued)

*SIC Code	Industry Group and Industry*	Working Owners & Partners			Employees					
					Total			Production Workers		
		1961	1962	1962/1961 %	1961	1962	1962/1961 %	1961	1962	1962/1961 %
01	Foods & beverages	99	92	-7.1	3,013	3,145	+4.4	1,947	2,023	+3.9
129	Bakeries	(72)	(66)	(-8.3)	(883)	(870)	(-1.5)	(452)	(455)	(+0.7)
141	Soft drink mfg.	(7)	(4)	(-42.9)	(409)	(450)	(+10.0)	(180)	(185)	(+2.8)
04	Leather industries	Included below under "Total Confidential Data"								
05	Textiles							(479)		
06	Knitting mills	-	-	-	1,217	1,233	+1.3	1,079	1,105	+2.4
07	Clothing	2	-	-100.0	354	369	+4.2	319	325	+1.9
2431	Men's clothing factories							(200)		
09	Furniture and fixtures	26	23	-11.5	308	245	-20.5	265	210	-20.8
261	Household furniture	(24)	(21)	(-12.5)	(119)	(58)	(-51.3)	(105)	(53)	(-49.5)
10	Paper & allied industries	-	-	-	270	315	+16.7	219	240	+9.6
11	Printing, publishing, etc.	31	30	-3.2	1,331	1,370	+2.9	782	777	-0.6
286	Commercial printing	(21)	(20)	(-4.8)	(383)	(360)	(-6.0)	(289)	(276)	(-4.5)
289	Printing and publishing	(4)	(6)	(+50.0)	(895)	(959)	(+7.2)	(469)	(480)	(+2.3)
12	Primary metal industries	Confidential								
13	Metal fabricating	25	22	-12.0	1,435	1,661	+15.7	1,085	1,270	+17.1
303	Ornamental and architectural	(2)	(7)	(+250.0)	(138)	(223)	(+61.6)	(78)	(137)	(+75.6)
308	Machine shops	(20)	(13)	(-35.0)	(211)	(253)	(+19.9)	(170)	(205)	(+20.6)
14	Machinery	-	1	+100.0	381	390	+2.4	240	236	-1.7
15	Transportation equipment	48	54	+12.5	3,670	4,240	+15.5	3,097	3,683	+18.9
327	Shipbuilding and repair	(2)	(1)	(-50.0)	(2,006)	(2,286)	(+14.0)	(1,770)	(2,029)	(+14.6)
328	Boatbuilding and repair	(43)	(49)	(+14.0)	(130)	(167)	(+28.5)	(113)	(153)	(+35.4)
16	Electrical products	Confidential								

Table A-1 (Continued)

*SIC Code	Industry Group & Industry*	Establishments 1961	Establishments 1962	Establishments 1962/1961 %	Gross Value of Shipments 1961 $'000	Gross Value of Shipments 1962 $'000	Gross Value of Shipments 1962/1961 %	Value Added 1961 $'000	Value Added 1962 $'000	Value Added 1962/1961 %
17	Non-metallic mineral products	27	29	+7.4	3,874	3,761	-2.9	1,565	1,733	+10.7
347	Concrete products	(13)	(17)	(+30.8)	(1,040)	(1,112)	(+6.9)	(463)	(513)	(+10.8)
353	Stone products	(6)	(4)	(-33.3)	(290)	(285)	(-1.7)	(222)	(163)	(-26.6)
18	Petroleum products	1	1	-	Confidential					
19	Chemicals & chemical products	15	16	+6.7	5,857	5,787	-1.2	5,336	2,733	-18.1
20	Miscellaneous manufacturing	37	37	-	1,800	1,862	+3.4	1,166	1,174	+0.7
3815	Dental laboratories	(15)	(16)	(+6.7)	(297)	(340)	(+14.5)	(210)	(246)	(+17.1)
397	Signs and displays	(6)	(6)	-	(221)	(244)	(+10.4)	(121)	(143)	(+18.2)
**	Total confidential data	21	20	-4.8	117,435	131,496	+12.0	44,313	45,432	+2.5
	TOTAL SECONDARY MANUFACTURING	482	483	+0.2	251,294	282,332	+12.4	113,899	123,739	+8.6

Table A-1. (Concluded)

*SIC Code	Industry Group and Industry*	Working Owners & Partners			Employees					
					Total			Production Workers		
		1961	1962	1962/1961 %	1961	1962	1962/1961 %	1961	1962	1962/1961 %
17	Non-metallic mineral products	10	10	-	318	275	-13.5	213	175	-17.8
347	Concrete products	(7)	(7)	-	(104)	(86)	(-17.3)	(86)	(67)	(-22.1)
353	Stone products	(2)	(2)	-	(40)	(31)	(-22.5)	(32)	(27)	(-15.6)
18	Petroleum products	Confidential								
19	Chemicals & chemical products	3	4	+33.3	322	304	-5.6	150	136	-9.3
20	Miscellaneous manufacturing	21	23	+9.5	225	197	-12.4	167	156	-6.6
3815	Dental laboratories	(14)	(15)	(+7.1)	(39)	(39)	-	(32)	(30)	(-6.2)
397	Signs and displays	(5)	(5)	-	(28)	(26)	(-7.1)	(24)	(22)	(-8.3)
**	Total confidential data	7	6	-14.3	4,980	4,877	-2.1	3,946	3,846	-2.5
	TOTAL SECONDARY MANUFACTURING	272	265	-2.6	17,824	18,621	+4.5	13,509	14,182	+5.0

Sources: Basically DBS 31-204 (1962 preliminary). For exceptions, see notes on following pages.

Technical Notes - Table A-1:

* DBS 12-501 (Standard Industrial Classification Manual). Industry group data are coded as two-digit. Industry data are three- or four-digit and in brackets. They are shown only where data are available and do not add up to the industry group totals.

** Includes SIC industry groups 4, 5, 12, 16 and 18.

SIC 01 Includes the following types of manufacturing activity -- bakeries, soft drinks, slaughtering and meat packing, animal oils and fats, sausages and sausage casings, biscuits, confectionery, miscellaneous foods and distillery, brewery and winery products. Separate data are available only for bakeries and soft drink manufacturers. Data for the other industries are lumped together by DBS because of the secrecy requirements of the Statistics Act. Poultry processors, dairies, fish plants, fruit and vegetable canners and preservers, and feed mills are considered to be primary manufacturing -- see the agricultural and fisheries sectors.

" 04 Includes shoes, boot and shoe findings, and miscellaneous leather products.

" 05 Includes cotton, yarn and cloth, synthetic textiles, canvas products, embroidery and pleating and hemstitching, and miscellaneous textile products. Bracketed data from DBS 31-204 (1961). Revised 1961 data not available but believed to be little changed from original (see Table 2, DBS 31-203 (1962).

" 06 Includes hosiery and other mills.

" 07 Includes men's and women's clothing factories, fur goods, hats and caps, and miscellaneous clothing. Bracketed data for men's clothing factories from DBS 31-204 (1961) -- see note 05 above.

" 09 Includes household and other (SIC 265) furniture.

" 10 Includes folding, set-up and corrugated boxes, and other paper converters. 1961 data estimated by V.E.P. from DBS 31-204 and 36-204. Pulp and paper mills are excluded -- see forestry sector.

" 11 Includes commercial printing, printing and publishing, engraving and stereotyping, and publishing only.

" 12 Includes iron and steel mills and iron foundries.

" 13 Includes ornamental and architectural metals, machine shops, boilers and plates, fabricated structural metals, metal stamping and pressing and coating, wire and wire products, hardware and tools and cutlery, heating equipment, and miscellaneous metal fabricating.

"

" 14 Includes miscellaneous machinery and equipment manufacturers only.

" 15 Includes shipbuilding and boatbuilding and repair, aircraft and parts, truck bodies and trailers, and railroad rolling stock. Gross value of production, not shipments, is shown for shipbuilding, aircraft and railroad rolling stock.

" 16 Includes communications equipment, batteries, and electric wire and cable.

" 17 Includes concrete, stone and gypsum products, ready-mix concrete, and mineral wool. Excludes cement and clay products -- see mining sector.

" 18 Includes petroleum refining only.

" 19 Includes mixed fertilizers, pharmaceuticals and medicines, paints and varnish, soap and cleaning compounds, industrial chemicals, and other chemicals, n.e.s.

SIC 20 Includes dental laboratories, signs and displays, ophthalmic goods, venetian blinds, plastic fabricators n.e.s., toys and games, artificial ice, and stamp and stencil (rubber and metal) manufacturers.

Table A-2. RELATIVE SIGNIFICANCE OF VARIOUS TYPES OF SECONDARY MANUFACTURING, SELECTED INDICATORS, NOVA SCOTIA, 1962

Industry Group & Industry *	Establishments	Gross Value of Shipments	Value Added	Employees	
				Total	Production Workers
TOTAL SECONDARY MANUFACTURING	100%	100%	100%	100%	100%
Foods & beverages	27.1	16.5	16.5	16.9	14.3
Bakeries	(15.1)	(3.8)	(4.3)	(4.7)	(3.2)
Soft drink manufacturers	(5.4)	(2.1)	(3.0)	(2.4)	(1.3)
Leather industries	0.6		Confidential		
Textiles	1.7		Confidential		
Knitting mills	1.4	3.7	4.1	6.6	7.8
Clothing	2.3	0.9	0.8	2.0	2.3
Furniture & fixtures	6.6	0.7	0.9	1.3	1.5
Household furniture	(5.4)	(0.2)	(0.2)	(0.3)	(0.4)
Paper & allied industries	0.6	1.7	1.8	1.7	1.7
Printing, publishing & allied industries	15.5	4.6	8.2	7.4	5.5
Commercial printing	(8.5)	(1.1)	(1.8)	(1.9)	(1.9)
Printing & publishing	(5.6)	(3.3)	(5.9)	(5.2)	(3.4)
Primary metal industries	1.0		Confidential		
Metal fabricating	10.1	7.2	7.3	8.9	9.0
Ornamental & architectural	(2.3)	(0.7)	(0.8)	(1.2)	(1.0)
Machine shops	(4.8)	(0.8)	(1.1)	(1.4)	(1.4)
Machinery	1.2	0.7	1.0	2.1	1.7
Transportation equipment	13.9	13.3	18.1	22.8	26.0
Shipbuilding & repair	(3.5)	(5.8)	(8.6)	(12.3)	(14.3)
Boatbuilding & repair	(8.9)	(0.5)	(0.7)	(0.9)	(1.1)
Electrical products	0.6		Confidential		
Non-metallic mineral products	6.0	1.3	1.4	1.5	1.2
Concrete products	(3.5)	(0.4)	(0.4)	(0.5)	(0.5)
Stone products	(0.8)	(0.1)	(0.1)	(0.2)	(0.2)
Petroleum products	0.2		Confidential		
Chemicals & chemical products	3.3	2.0	2.2	1.6	1.0
Miscellaneous manufacturing	7.7	0.7	0.9	1.1	1.1
Dental laboratories	(3.3)	(0.1)	(0.2)	(0.2)	(0.2)
Signs & displays	(1.2)	(0.1)	(0.1)	(0.1)	(0.2)
Total confidential data	4.1	46.6	36.7	26.2	27.1

* Industry data are bracketed. It should be noted that the industry totals, where given, do not add up to the relevant industry group total. For complete contents of each industry group, see technical notes to Table A-1.

Source: Computed from Table A-1.